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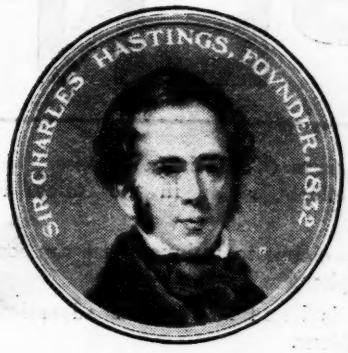

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Observations
ON
THE PROCESS WHICH RESULTS IN AURICULAR FIBRILLATION.

BY
SIR JAMES MACKENZIE, M.D., F.R.C.P., F.R.S.
(From the Institute for Clinical Research, St. Andrews.)

IT is just twenty-five years since the condition now called "auricular fibrillation" was recognized as a clinical entity. Its study in the human subject threw a new light upon a great number of heart problems. It was found, for instance, that this abnormal state resulted in the greatly increased susceptibility of the heart to stimulation not only by agents which increase the rate of the ventricle but also by agents which diminish the rate. It was found also that the heart reacted to drugs of the digitalis group with a greater readiness than does the normal acting heart. Heart failure is more readily induced, and the character of the heart failure is peculiar, differing greatly from most of the forms of heart failure which occur when the rhythm is normal.

Distinctive as these features are, the condition is of importance from another point of view as it represents a form of abnormal activity which is common to other organs and which holds out the promise of revealing the nature of abnormal states which have hitherto baffled inquiry. This aspect of the subject has been obscured by the unfortunate use of the term "fibrillation," for a better understanding of the subject shows that fibrillation of the auricle is but one of a number of incidents that follow the inception of the new condition. In this respect the use of the term has but followed the traditional method in medicine of calling the diseased condition by its more prominent symptom. In this case the use of the term has hampered progress, as it gives the impression that fibrillation is the cause of the condition, and so has led to attention being concentrated on what is but one incident.

FIG. 1.—Diagram representing the two main systems concerned in the heart beat. (1) The conducting system, represented by the sino-auricular node (S.A.N.) and the auriculo-ventricular node (A.V.N) and bundle (A.V.B.). In both auricles and ventricles are also Purkinje fibres which belong to this system, represented by the scattered cells (P) in the auricle. The vagus (*vag.*) and sympathetic (*sy.*) also belong to this system. (2) The contracting system, represented by the muscle cells of the auricle (A) and ventricle (V).

The Loss of Control.

There seems to be some law or principle which governs the functions of the organs of the body by which they are controlled by higher agencies. When this control is lost the functions of the organs become disturbed and their activities greatly modified. The phenomena produced by this disturbance vary with the organ affected. In an article recently published in this JOURNAL I suggested that the sino-auricular node and the conducting system exercised control over the muscles of the auricle and ventricles, and that the condition called auricular fibrillation was due to a loss of this control. Further research on these lines supports this view.

Retrospect.

In order to present the subject comprehensively, I give here a short review of the manner in which this condition was brought to light. It is now nearly forty years since I began an endeavour to solve the problem of pulse irregularity. Before I undertook this work many attempts had been made, with very little success. For a time I could make no progress, having no definite principle to guide me. After some years I recognized that in the study of irregularities, whether by the unaided senses or by the sphygmograph, it was only the left ventricle that was being studied. It occurred to me to inquire what the auricles were doing when the ventricle was irregular. The answer to this simple question revealed the principle which guided a research which has been successful in differentiating the great majority of irregularities. Means were devised by which the movements of the auricle could be registered at the same time as the radial pulse, so that it was possible to obtain simultaneous movements of auricle and ventricle. In this way a method was found by which we were able to differentiate most forms of irregularity.

During this time I was also watching coincident changes in the heart and their relation to heart failure. One patient with mitral stenosis I had been watching for about seventeen years. One day in 1897 her whole circulatory system suddenly underwent a change. The heart, which was perfectly regular before, became rapid and very irregular, pulsations in the veins and in the liver, due to the contraction of the auricle, disappeared, as well as the presystolic murmur, which had been unceasingly present for a great many years. At the same time there were signs of extreme heart failure—great breathlessness, blueness of the face and lips, swelling of the ankles, and enlargement of the liver. On account of the disappearance of all evidences of auricular activity I assumed that the ventricle had taken on the rhythm of the heart, and that the auricle had become paralysed, and in a book on the pulse published in 1902 I described this condition as "auricular paralysis."

I found among my patients others in a similar way, and so I came to recognize the condition as a distinct clinical entity. I watched the progress of these cases with particular reference to heart failure, and sought for the best methods of treating them, and in the course of this investigation I discovered the peculiar susceptibility of these hearts to the action of digitalis.

At the *post-mortem* examinations of the first few cases the walls of the auricle were so enormously distended and thinned that my idea of auricular paralysis seemed confirmed. But ten years later I had a *post-mortem* examination of a patient whom I had attended when the heart was normal in its action, and I witnessed the onset of this auricular "paralysis," and watched her progress seven years afterwards till she died. At the *post-mortem* examination the auricles were not dilated and atrophied, but seemed to be somewhat hypertrophied. I therefore concluded that if the auricle were hypertrophied it could not have been paralysed. This altered my conception, and I reasoned that the heart's contraction may have started at the auriculo-ventricular node, and that both auricle and ventricle had contracted together, and so called the condition "nodal rhythm."

In 1906 Cushny and Edmonds described the resemblance of the irregularity of the pulse in this condition with that of a dog's in whom they had produced auricular fibrillation, and suggested that both irregularities were due to the same cause. This view was confirmed in 1909 by Lewis, and from that time the term "auricular fibrillation" has been applied to this condition.

Continuing my observations on this condition I became gradually conscious that there was more in the matter than the auricle passing into fibrillation; but although I had studied a very great number of cases I could not see my way clearly to make any further progress until we began our systematic research in St. Andrews. Our methods of investigation led us to inquire into the mechanism of symptoms, and when we looked at the peculiar group of symptoms which resulted from this condition we were led to inquire into the nature of the stimulus which started the heart's contraction.

We considered the manner in which the stimulus for contraction arose in the normal heart; Keith and Flack had shown that it arose in a tissue specially developed for that purpose—the sino-auricular node, which is probably evolved from the sinus venosus of the lower animals. Accepting this view, we recognized that in auricular fibrillation this node is out of action and the stimulus for the contraction of the heart is produced in the fibres of the auricular muscle. Here, each fibre in its contraction stimulates its neighbours, and in this way an incessant movement is carried on by these fibres, and from this movement impulses are discharged which affect the auriculo-ventricular node. This node is in close relation to the auricle and from it a stimulus for contraction passes to the ventricle by the auriculo-ventricular bundle (see Fig. 1).

It will be seen that the whole fibrillating auricle is the source of the stimulus in this condition, while in the normal acting heart a specially evolved tissue of a minute size is the source of the stimulus. We can reasonably infer that the nature of the stimulus must be different in the two cases, and

we find evidences of this difference in the response of the ventricle to contraction.

Looking at the matter in this way, it seemed that the fibrillation of the auricle was the result of a process and not the process itself. The contraction of the auricle and ventricle are normally under the control of the sino-auricular node and other portions of the conducting system, and it seemed that the auricle passing into fibrillation was due to a loss of this control. The cause of the condition thus was not to be found in the study of the fibrillating auricle but either in the sino auricular node or its connexion with the auricle.

Langley's Observations on the Denervated Muscle.

One of the principles which guide us in our research is that when we find certain phenomena produced by one organ the mechanism of which is obscure we turn to the examination of other organs to see if similar phenomena are exhibited by them. We accordingly turned our attention to other organs of the body. In this search we recognized that while the mechanism which produced the phenomena would be the same, the phenomena themselves would be different, and would correspond to the function of the organ disturbed. A number of examples were revealed which seemed to favour this view, and to these I shall refer later. It was while on this quest I met Sir Edward Sharpey Schafer and discussed the problem with him, and he called my attention to some experiments by Langley which I had overlooked. Langley[1] had found that on the division of the motor nerve of a voluntary muscle the paralysed muscle which resulted therefrom was not an inert body, but that sooner or later the fibrils of the muscle showed constant movement. In other words, fibrillation of the muscle resulted when it was uncontrolled by the motor nerve.

There would thus seem to be a law which governs the activity of muscles, in that so long as a muscle is under control of the nervous system fibrillation does not occur. In the case of the ordinary muscles it is the nerves which exercise the control. The same law holds good for the heart, but in the case of the heart muscle it is the sino-auricular node and conducting system which exercise the control.

Difference between a Fibrillating Voluntary Muscle and a Fibrillating Auricle.

The voluntary muscle is not connected with any other organ, consequently no evidence of the fibrillation can be detected unless the muscle is exposed to view. With the auricles, however, the condition is different. They are hollow muscles and contain fluid, the slight movements of the wall are communicated to the fluid, and it is for this reason we can sometimes detect fibrillary waves in the jugular vein during auricular fibrillation. Moreover, the auricles are in direct communication with the very sensitive auriculo-ventricular node (Fig. 1), and therefore the impulses which arise from their movement act upon this node, which, being stimulated, sends impulses to the ventricle, and there results that peculiar irregularity of the ventricle which is characteristic of this condition.

Rhythmical Movements in the Fibrillating Muscle.

The minute study of fibrillation in the denervated muscle reveals that at times there are rhythmical movements which resemble flutter or the more rapid movements that are sometimes present in fibrillation of the auricle. Langley, in describing fibrillation in the voluntary muscle, states: "In close examination it is seen that the contraction of any one spot—as a rule, at any rate—has a perfectly regular rhythm, and that the apparently continuous movement of the surface as a whole is mainly due to the rhythm in adjoining fibres being different. The rate of movement and the intensity of contraction vary considerably in different parts of the muscle."

The Results on the Heart of Loss of Control.

When this loss of control occurs the heart becomes a different organ in respect of the way in which it maintains the circulation and of the manner in which it responds to outside stimulation and to remedies. The auriculo-ventricular node and the bundle become much more sensitive to stimulation, while the ventricle contracts in a manner which it never does when under the control of the conducting system. I have already dwelt upon the fact that the varying size of the pulse beats which occur so frequently in auricular fibrillation would seem to imply that all the fibres of the ventricle do not participate in the smaller contractions. I had reasoned that this is probably due to the difference in the stimulus, but it is quite possible that it may be due to an altered condition of the ventricle when it is removed from the control of the sino-auricular node.

Circumstances that cause Loss of Control.

These views are mainly suggestive, and intended to indicate the lines on which further investigation should be pursued. The investigation of this subject should be devoted to the consideration of the conditions which give rise to it. The change manifestly takes place in the sino-auricular node or in its connexion with the auricle. This is brought out particularly well from the consideration of some of the circumstances which induce this loss of control.

Many years ago I drew attention to the fact that digitalis acted upon the auriculo-ventricular node and bundle, causing sometimes the blocking of the stimulus from the auricle, so that ventricular beats dropped out. In 1906 I pointed out that this was due to the action on the vagus. This evidence was obtained from a man in whom digitalis caused a dropping out of ventricular beats. When the effect of the digitalis was passing off this action disappeared, but the patient could bring it back at once by the act of swallowing, a procedure which could only produce an effect by acting through the vagus.

I have recorded an account[2] of another patient in whom digitalis showed an instructive series of responses. The digitalis caused slowing of the whole heart for short periods—that is, the drug acted on the sino-auricular node, and the auricle and ventricle contracted at a slow rate. During some of these periods the standstill was so long that the ventricle contracted independently of the auricle. At another period the auricle passed into fibrillation—in other words, under the vagal influence the sino-auricular node ceased for a time to act, so that the ventricle contracted independently, and at another time the auricle, escaping from the control of the sino-auricular node, passed into fibrillation.

This observation throws a light upon certain experiments of Lewis and his colleagues. In one experiment[3] they stimulated the vagus nerve and took an electrocardiograph record of the auricular contraction. The record shows at first a great slowing or standstill of the auricle, followed by a sudden and enormous increase of the auricular rate up to 1,200 beats a minute. It seems almost certain that this great increase in rate was due to the auricle passing into fibrillation or into some other abnormal state in consequence of the suspension of the action of the sino-auricular node, just as happened in the patient under digitalis. It should be borne in mind that in stimulating the vagus nerve the slowing of the heart is due to the action of the nerve upon this node, and that as the node ceases to act a condition equivalent to cutting the nerve to a muscle results, and the auricle passes into fibrillation. Lewis, therefore, is scarcely justified in drawing the conclusion that the action of the vagus is to re-excite the auricular muscle and produce a shortening of the refractory period.

The importance of looking to the loss of control of the sino-auricular node as the state in which auricular fibrillation occurs directs attention to the immediate cause of the condition. It is manifestly vain to seek for the cause of paralysis of a muscle whose nerve is cut in the muscle itself, and it is therefore equally vain to seek for the cause of auricular fibrillation in the study of the movements of the fibrillating muscle. The mere fact that in auricular fibrillation there is a short refractory period does not justify the assumption that the shortened refractory period is the cause of auricular fibrillation. Trying to stop fibrillation by attempting to lengthen the refractory period is manifestly a procedure which is bound to fail, and is due to a misconception of the nature of the condition.

The Loss of Control of the Ventricle.

What happens when the auricle escapes from the control of the sino-auricular node also happens when the ventricle escapes from the control of the conducting system. This part of the subject has so far been very imperfectly investigated. At least two peculiar forms of ventricular contraction occur—one shown by a series of small beats apparently of the same origin as ventricular extra-systoles, another when the ventricle fibrillates and death occurs.

The Loss of Control in other Organs.

In the search for a similar condition in other organs I looked at the muscular system, and I find some very suggestive comparisons. Recently, while watching an operation for the removal of a small tumour from the vocal cords

by my friend Dr. Douglas Guthrie, I was struck by a peculiar movement in the neck. The patient had been for a short time under chloroform, and I observed what seemed to be the pulsation of a vein, which extended from the left clavicle near its inner end half-way up the neck. The movement was perfectly regular at 60 beats a minute. When I felt the pulse and watched the veins in the neck I discovered that there was no relation between this curious beating and the arterial and venous pulse, the latter beating about 80 a minute, with frequent intermissions due to extra-systoles. Looking more closely at the movement and feeling it with the finger, it became evident that it was due to a few fibres of the platysma muscle. These fibres were about an eighth of an inch across and appeared to be attached to the skin over the clavicle at the lower end, and they extended up the neck for three or four inches and caused a movement of the skin at the level of the thyroid cartilage. There was also a smaller movement of the same kind at the lower end, about an inch behind the larger movement. These movements continued for fully an hour—in fact, during the whole time the patient was under chloroform. As soon as he came out of the chloroform the movement ceased.

It is very likely that the paralysis of certain muscles, as in diphtheritic paralysis, is really due to this loss of control. Dr. Maitland Ramsay tells me that the ciliary muscle in certain cases of errors of refraction may suddenly cease to act, and it occurs to him that probably the same condition is present here. It is well known that in dangerous *post-partum* flooding the uterine muscle is in a state of extraordinary laxity. Dr. Orr has suggested that when this happens the uterine muscle is probably in a similar condition. The circumstances certainly favour its occurrence, for experience has shown that a common factor in the production of auricular fibrillation is great bodily effort; and the observation of Dr. Ramsay points the same way, in that the ciliary muscle ceases to act after the strain in attempting to correct the error of refraction, and the uterus has just ceased from a severe strain shortly before flooding occurs.

That other organs may show the same peculiarity seems reasonable. Loss of control results in the cells taking on an individual action and stimulating one another. Professor Herring has called my attention to the fact that when the nerve to the salivary gland is cut the gland is not inactive but continues to secrete, and this secretion is spoken of as "paralytic."

Probably the condition of epilepsy affords another illustration. It is manifest that in this state there must be the same direct cell to cell stimulation as occurs in the fibrillating muscle. As we watch the onset of an attack of epilepsy we observe that the finer movements of expression or of the fingers are first affected, and from here the attack spreads to all the muscles of the body. It is evident that no other cause but the disturbance of the cellular elements in a localized area of the brain can produce these effects, and it is likely that here also the condition is due to a loss of control of some higher centre. The same explanation probably accounts for migraine attacks.

These views are not put forward as if they were established, but merely to provide a guide for further investigation. They are sufficient to justify the suggestion that we have here an abnormal process which is common to a great many organs, and that the aim of the investigator should be to find out the nature of the process rather than to study its result.

Terminology.

Though the term "auricular fibrillation" is misleading, it has gained such a wide acceptance that for the present it is better it should be retained. It would be more appropriate to describe the condition by the process which produces it, and in a sense the original term "auricular paralysis" might be employed, seeing that it resembles the paralysed muscle. But as that term does not clearly describe the process the change of term would avail little. The important consideration is that the fibrillating auricle is but one result of a vital process, as yet not fully determined.

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Remarks
ON
BONE GRAFTING AS AN AID IN TREATMENT OF TUBERCULOUS SPINAL CARIES.

[*With Special Plate.*]

BY
SIR HENRY M. W. GRAY, K.B.E., C.B., C.M.G., F.R.C.S.EDIN.,
SURGEON, ABERDEEN ROYAL INFIRMARY.

THE use of bone grafting as an aid in the treatment of tuberculous spinal caries is of comparatively recent origin. It was introduced by Hibbs and Albee, and naturally, in view of the reputation of the originators, was tried at once by those who sought more satisfactory methods of treating Pott's disease than were previously known. As is usual in such cases, strong opposition has been provoked in many quarters, and it is therefore not surprising that a distorted conception of the value of the treatment exists at present in the profession. We have to attempt to sift out the truth from the apparently contradictory views expressed on the subject. When, from reports by reputable observers and from my own experience, the facts become established that cases of Pott's disease of the spine are enabled to return to a normal mode of life in a shorter period of time after this than after any other previously adopted method of treatment, and that such cases maintain their capacity without recurrence of the trouble over periods of many years, I am forced to believe that this operation has a useful place in the therapy of spinal caries and to seek to define the cases in which it may be applied with good prospects of success.

General Principles in the Treatment of Tuberculous Disease.

The present-day conception of the rational treatment of tuberculous disease of any tissue may be briefly stated as follows:

If there is reasonable prospect of attaining complete eradication of the disease without maiming the patient most surgeons prefer to operate in order to procure this end, in spite of the fact that radio-therapists and other advocates of conservative treatment claim excellent results from their treatment. The help of the radio-therapist, however, is usually also invoked by surgeons in order to make cure as certain as possible—that is, such cases are treated on the same plan as cases of accessible cancer. If tuberculous disease cannot be eradicated surgically without interfering materially with the capacity of the patient to lead a healthy, active life, conservative methods of treatment are tried, and are often successful. The chief drawback to such forms of treatment is that they take a long time when compared with surgical ablation of the disease. In young children this is not of the same importance as in older children and adults. Generally speaking, however, the best remedy is that which most rapidly brings the disease to a standstill and is followed by cure. No form of treatment apparently can ensure that the disease will not break out at any time in other parts of the body.

Whether "conservative" or surgical methods of local treatment are used, all are agreed that general treatment, providing suitable diet, good hygienic surroundings, open air, sun baths, possibly vaccine or other inoculations, etc., is also of the greatest importance.

Local treatment aims at producing rest of the affected part. When bones or joints are concerned, fixation in the best possible way is established. Fixation is essential to success. The sooner all such measures are carried out in an efficient manner the greater is the prospect of cure.

Application of General Principles to the Treatment of Spinal Caries.

It is obvious that disease of the bodies of the vertebrae cannot be attacked surgically in the satisfactory way in which a focus, for example, in the tibia can be dealt with. At best the occasional removal of sequestra is all that has been attained, coupled, perhaps, with more or less inadequate scraping of the surrounding affected bone; even such measures are attended with considerable risk to the patient. It is evident therefore that Pott's disease must be treated expectantly so far as the actual *focus mali* is concerned, and

that all efforts must be directed to raising the patient's resisting and recuperative powers, and at the same time to procure as absolute fixation as possible of the diseased parts and their surroundings.

All are agreed on the difficulty of fixing the spinal column efficiently by external splinting so that movement is entirely prohibited. It has been abundantly proved that absolute fixation of the affected part of the column can be obtained by the operation of bone grafting. Obviously, the grafts and the new bone stimulated into being by the operation must be strong enough to bear, without bending, any strain put upon them. It is for this reason that I carry out the operation which I shall describe later in preference to Albee's or Hibbs's methods. I believe that unsatisfactory results of operation by bone transplants in young children may be attributed chiefly to the grafts obtainable from the tibia being too thin and pliable to be efficient.

Considerations regarding the Time Element in this Form of Treatment.

If bone grafting is carried out efficiently we can reckon that fixation will be adequate in two to four months, and that thereafter the patient can usually be allowed an increasing amount of freedom, so that in six to twelve months he may be leading a normal life except for the slight restrictions imposed upon him by the stiffness of the part operated on. The formation of new bone, fixing and reinforcing the grafts, can be, and ought to be, verified by *x*-ray examination before such freedom is allowed.

It is thus seen that by the employment of operative fixation much time is gained for the patient when compared with fixation by external splinting. As to when freedom should be allowed each case must be considered on its merits. I do not believe in taking risks, and have decided upon the following rules: In uncomplicated cases (and the most important and frequent direct complication is probably abscess formation) I believe that at the end of two to three months all fixation apparatus may be removed, so that the patient can move in bed, carefully, in the horizontal position. This obviously adds to his comfort and happiness. The slight strain put upon the graft will tend to stimulate the bone growth and strengthen the fixation. If abscess has developed the time taken in the process of cure largely depends on the behaviour of the abscess, which is uncertain. Until the abscess in connexion with the vertebral bodies is cured no relaxation of treatment should be allowed.

The time element need not be considered in young children, in whom external fixation can be made most efficient, and who become easily inured to their irksome position; but in older children, especially those who have to learn a trade, and in adults, time is practically always of great importance.

Risk Involved in the Method of Treatment Employed.

In comparing the two methods of treatment the question of danger must be taken into account. In my experience the operation has not proved dangerous. One death which can be attributed directly to the operation has occurred in twenty-eight cases. This happened in a young child who was going downhill rapidly in spite of treatment. The case was treated soon after Albee had published the first account of his operation, and it must be remembered that the operation is not now generally recommended in young children.

Shock has not occurred in my cases to any noticeable extent. I believe that it can be obviated by flooding the parts operated on with local anaesthetic solution in the way I shall describe.

Royal Whitman has said, "Pott's disease is the most dangerous of all the tubercular affections of the bones or joints." In 1901 he stated that "at least 20 per cent. of all patients die during the progress of the disease and within a few years after its onset, from causes directly or indirectly dependent on the local lesion." Lovett, in Keen's *Surgery*, 1907, states that "the mortality is probably not under 33 per cent. if ultimate results are considered." No doubt under modern treatment the mortality is considerably less, but all the same it must still be so high that any measure which makes for success should be used in the "treatment complex."

The sooner remedial treatment is instituted in tuberculous disease the better the results, so that an operation of this nature, although it may be abhorrent for various reasons to some minds, should not be regarded as a last resort. The less the extent of the disease the less the severity of complications—or, in other words, the sooner remedies are applied, and especially the more adequate the fixation, the more certain will be the cure. The operation is not difficult, but it must not be undertaken by surgeons who are unfamiliar with the technical essentials necessary for success in bone-grafting work. Hibbs (1918) reports 210 cases operated on down to three years before this date; there had been 31 deaths. Meyerding (Mayo Clinic, 1920) reports 100 operations down to two years previous (modified Albee operation); 86 per cent. had been relieved of symptoms, 3 were not improved, 3 were not heard from, and 8 had died since operation.

Advantages of Treatment by Operation.

To recapitulate briefly: Local treatment aims at establishing fixation of the affected parts. Operation by bone grafting effects this quickly and certainly, in a permanent manner, and, when carried out carefully, without undue danger to the patient, so that apparatus for external fixation can be discarded at a comparatively early period. The patient can resume a normal life much earlier, and, by reason of the bony fixation which extends beyond the diseased area, is less likely to suffer from local recurrence of the disease than after "conservative" treatment. Operation is not advisable in young children, but in older children and in adults it must be seriously considered.

Patients Unsuitable for Operation.

Patients I consider unsuitable for treatment by bone-graft fixation are:

1. Those in which there is *pronounced disease elsewhere* of a nature which would make one chary of performing any fairly severe surgical operation. I do not think slight or early tuberculous disease of other parts—for example, lung or other bone—precludes operation. In one case, indeed, a most gratifying result followed operation in a lady with fairly advanced phthisis. She was completely relieved of her spinal symptoms and was leading an active life when I heard of her five years later.

2. Those rare patients in whom it can be diagnosed that the *spinal cord* has become affected by *infiltration* by tuberculous disease in distinction from external pressure from tuberculous products. In one of my cases death followed several weeks after operation from spread of the disease in the spinal cord. In this case the pain and partial paralysis was at first thought to be due to extradural pressure. The onset of pressure paralysis, according to the late Mr. H. O. Thomas of Liverpool, increases the prospect of cure by means other than operation. This opinion is supported by Sir Robert Jones. I should advise operation at once if such paralysis developed during conservative treatment.

3. The operation is *not* indicated *in the case of very young children* for the reasons already mentioned. Well-nourished children of 10 or even younger are quite suitable for treatment in this way. At the same time I should not hesitate to use the operation in very young, otherwise healthy, children, when the patient does not show continuous progress towards recovery under non-operative treatment.

Operation Tends to Prevent Complications.

In other cases I believe that this operation enhances the prospect of rapid and permanent cure, and that therefore it should be performed by a capable operator as soon as possible after the disease is diagnosed. Patients in whom deterioration in various ways was pronounced before operation have usually begun to pick up again almost at once. On that account I feel that operation will prevent complications with greater certainty than conservative measures. Fixation by bone graft eliminates the danger consequent on restlessness of the patient, inadequacy of external splints, and movement of diseased parts when the necessary cleansing of the skin of the back is attended to.

A Probable Cause of Unsatisfactory Results.

I believe that many of the unsatisfactory results after operations are due to the fact that patients have been permitted to get up and walk too soon after operation. It seems to me to be "tempting Providence" to act on a belief that such a slowly developing and slowly improving condition as tuberculous disease of the bone can be regarded as cured in six to eight weeks, to say nothing of the probability that the grafts will not be solidly united in that time, and that therefore slight movement will occur. We do not allow the bones in fracture of a healthy femur or tibia to bear weight so soon, and it seems rather preposterous to expect grafts to be capable of bearing the strain of maintaining the trunk in

position, even when supported by external splints, any sooner than normally placed bone. I think that, for safety's sake, patients should not be allowed to walk or even to sit erect before four to six months after operation, even although exceptional cases may do so without apparent detriment at a much earlier stage. The disease is very insidious, and movement of the muscles attached to the front of the affected part of the spine may keep up or aggravate the lesion—for example, by causing abscess formation or increasing the size of abscesses already present.

Operation in Relation to Deformity.

Operation should be done before deformity occurs. If deformity is present before operation I try by postural methods to bring about gradual straightening. If these fail, and they frequently do, I deliberately break the grafts so as to adapt them accurately to the curvature. I have found that these fractures unite firmly. I never attempt to reduce the deformity forcibly. In rare cases tendency to formation of sores over a prominent spinous process may be prevented by removal of the process. After operation observations at frequent intervals should be made so that possible static deformity of the spine beyond the upper or lower end of the graft may be prevented.

Operation in Relation to Abscess.

Operation should be done if possible before abscess occurs, but in some cases the disease is so insidious that the development of abscess is the first reason for causing the patient to seek advice. Abscess usually dries up rapidly after operation is done, but in some cases it may be advisable to treat the condition by aspiration or by other remedies. If the abscess arises in the neck the head should be fixed by suitable apparatus; if in the lower dorsal or lumbar region, the lower limbs should be fixed, otherwise abscess may persist or develop. In one case I regret that I did not fix the lower limbs; the abscess increased so persistently that it had to be laid open and treated by instillation of antiseptics. I am glad to say that this patient is now thoroughly convalescent. I believe that movements of the diaphragm may have the same deleterious action as movements of cervical muscles or psoas muscles. One patient who had an abscess in the posterior mediastinum from mid-dorsal caries died two years after operation from pulmonary complications, the abscess having ruptured into the right pleural cavity.

On two occasions I have opened an abscess in the erector spinae mass while the bed for the graft on that side was being prepared. In both cases the graft healed firmly in position, although the abscesses went on developing and had ultimately to be laid open and treated by energetic surgical means. One of these cases (psoas abscess) is mentioned above. In the other case the abscess developed from caries of one of the lumbar transverse processes, a focus of disease additional to that in the vertebral bodies. Successful grafting under similar apparently unfavourable conditions has, of course, been noted by other operators.

Fate of the Graft.

It appears to be incontrovertible that the grafts grow in length, corresponding to the growth of the patient's spinal column and without producing deformity. It has always seemed to me to be rather misleading to say that all grafts become absorbed, although, no doubt, complete absorption may occur in badly placed or improperly cut grafts—that is, in grafts which do not "take," or, in other words, do not form osseous connexion with the bones with which they are placed in contact. I believe that ordinarily, in grafts which are properly cut and placed and take root, absorption and growth occur in a manner similar to that which takes place in the normal metabolism of bone. (See Plate, Fig. 1.)

THE WRITER'S OPERATION.

I have only once done Hibbs's original operation, and only once done Albee's operation, although I consider the latter to be the more satisfactory. I do not think, however, that bridging the tips of the spinous processes of the vertebrae, as is done in Albee's operation, gives sufficient fixation, as there must be a certain amount of "give" in these spinous processes and grafts, at all events in the dorsal region, where the disease is most frequently situated. Fixation of the diseased part seems to me to be rather uncertain owing to the graft being inserted at such a distance from the articular processes and intervertebral discs where movements can occur. I believe that this inadequate fixation is the cause of some of the unsatisfactory results following this operation, especially in younger children. In Hibbs's most recent method, if a continuous column of bone is formed between the laminae as well as between the spinous processes, fixation must be good, but the operation seems to me to be needlessly complicated and severe and not likely to be so uniformly successful as that which I have practised and now recommend. I described this operation at the meeting of the British Medical Association in Aberdeen just before the outbreak of the European war, and I may say that I had previously had and have since had such satisfactory results that I can see no reason for altering the procedure. I have tested it in twenty-eight cases. The results are equally good whether the disease affects the lower cervical, the dorsal, or the lumbar vertebrae. The method is as follows:

The Plaster-of-Paris Splint.

On the day before operation a strong, accurately fitting, plaster-of-Paris splint is made, covering the whole of the back and curving slightly round the sides of the body; in cervical cases it reaches up to the vertex of the skull. While it is being applied and fixed with bandages the patient, as a rule, supports himself on his hands and knees and thereafter lies prone until the plaster has set. Dressings should be previously applied in the same way as at the end of the operation, so that the splint will lie comfortably and at the same time exert equable pressure at each side of the spinous processes over the erector spinae muscles. In this way the best position for fixation is attained.

At the operation the patient lies in the prone position. It may be necessary for his comfort to place a thin pillow under his abdomen.

Injection of Local Anaesthetic.

The erector spinae muscles, close to the spinous processes and laminae of the area to be operated on, are suffused with 1/2 per cent. novocain solution with adrenaline. This is done whether a general anaesthetic is used or not. The procedure obviates shock and reduces the loss of blood to a minimum; it also renders the operation easier owing to the comparatively bloodless field produced. (I make this infiltration in all laminectomies.) A similar injection is made on the subcutaneous surface and adjacent edges of the tibia from which the graft is to be cut. I have done the whole operation repeatedly under local anaesthesia alone.

The Operation Described.

A median incision is made; the aponeurosis is incised on each side close to the spinous processes; the muscles are elevated off the spines and laminae—all to an equal extent—above and below the diseased vertebrae and to a total length equalling the longest possible graft available from the tibia. The periosteum of the spines and laminae is incised and reflected upwards and downwards off the outer and posterior aspects of these structures. The exposed bone is roughened by making small irregular incisions with a chisel and raising the edges of these incisions. Gauze packs are then inserted firmly into the cavities on each side of the spines while the tibial grafts are cut.

The leg is freely flexed on the thigh so as to give access to the front of the tibia. A skin incision is made along the whole length of the tibia and the periosteum of the antero-internal surface of the bone is exposed by dissection. In a child the epiphyseal lines are left intact when the graft is cut; in an adult the bone may be cut to within about half an inch or

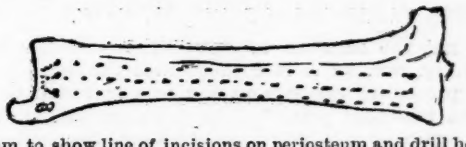

Diagram to show line of incisions on periosteum and drill holes on antero-internal surface of the tibia. At (*a*) the small dotted lines show the directions in which drills and osteotome should cut.

so from the articular surface. Owing to the general shape of the tibia and its medullary parts the grafts must be cut in wedge form—the breadth of their bases together extends to about three-quarters of the breadth of the anterior tibial surface. The periosteum is incised as indicated in the diagram, and the edges of the incision are separated slightly with a rugine.

Drill holes are made, reaching into the medulla, along these incisions at intervals of half to two-thirds of an inch. The bone dust from these holes is carefully preserved in a spoon. The tibia is split with an osteotome along the lines of holes—at first superficially, then deeply. The holes tend to keep the line of cleavage from diverging. (They are unnecessary in the comparatively soft bone of a young child if a sharp chisel be used.) In this manner two strong grafts are cut, composed of periosteum and dense and cancellous bone with pieces of medulla adhering thereto. They are made purposely with jagged edges, as in this way a larger amount of potentially successful osteoblastic surface is provided than in the usual way of cutting grafts with a circular saw.

An assistant stitches the incision in the leg while the grafts are being placed and fixed in the back. In my experience the tibia has never failed to regenerate without mishap. At the end of a few months the scar on the skin is the only sign of any operation having been performed.

The operator removes the gauze packs from the wounds in the back, and in the spinal groove on each side the bone dust is smeared along the line of junction of the spinous processes and laminae, where the grafts are going to lie, being spread more thickly at the upper and lower ends of the wounds, in order to foster osseous fusion. Care is taken that the periosteum of the spines and laminae is properly reflected so that the graft comes directly in contact with the bones. The grafts are placed so that their periosteum is outermost.

The edges of the aponeuroses are approximated across the mid-line by catgut sutures and the wound is closed without drainage. The pressure of the muscles and dressings is usually enough to keep the grafts in place. I have never used special fixation by sutures or other means. Mastisol is painted over the wound and surrounding skin before the sheet of gauze dressing is applied. The advantage of this application is at once obvious to those who have seen it in use.

In order to prevent soiling of the wound from urine or faeces the following precaution is taken: a transverse area of skin across the back of the sacral and iliac regions, about two inches wide, is painted with mastisol. The lower edge of an appropriately large piece of batiste is made to adhere to this area and the remainder of the sheet of batiste is then folded down over the buttocks and thighs.

A thick sheet of cotton-wool is made to cover the back, smooth extra pieces being laid over the erector spinae muscles on each side of the skin incision. The plaster splint is applied and a binder placed in position, the patient is turned carefully on his back, and the binder is pinned tightly over the abdomen and chest. In cases of caries in or above the mid-dorsal region this splint is all that is required in tractable patients, but in children and in adults when the disease is low down the patient is fixed as comfortably as possible in a Jones's double abduction frame, so that the lower extremities are prevented from moving. No special splint is applied to the leg that has been operated on, but a very thick layer of cotton-wool is placed over a mastisol and gauze dressing and the whole mass is very firmly bandaged. The foot is included in the bandage so as to prevent oedematous swelling. The toes are left out for inspection. Occasionally when the dressings are removed from the leg there is a gush of dark blood from one or more of the intervals between stitches. If there is evidence of pent-up blood one or more of these intervals is opened. In either case the excessive accumulation of blood is squeezed out of the tibial cavity, the skin is thoroughly cleansed again, and fresh dressings are applied. Usually all dressings can be left off in, at most, three weeks.

The Method of Cutting the Graft.

This is not the occasion to discuss the problems of bone grafting fully, but, as it is evident that the success of this operative procedure depends on the way in which the bone grafts take root and persist, it may be permitted to draw attention again to the way in which I cut the grafts and to the method by which they are placed. I can truly say that I do not know of any failure in operation by myself in any situation with a bone graft cut in the fashion I have described. I have already indicated some of the reasons which, I think, ensure such success. The chief of these is the provision of a large area of bone on whose surface undamaged osteoblastic tissue is present. I believe that this is attained in greater measure by cutting the grafts in the manner I have described than by cutting them with a saw, especially a rapidly rotating circular saw, which tends to cauterize the cut surface of the bone by frictional heat. When orthopaedists try to prevent bone growth—for example, in arthro-plastic operations—they make the surfaces of the opposing bones as smooth as possible. Surely, then, it is of advantage, when bone growth is desired, to make the surface of a graft as irregular as is compatible with its future function, and to avoid damaging the exposed surfaces as much as possible. Because of the osteoblasts they contain the potential value of bone particles or shavings cannot be disregarded when we consider the formation of spurs or other osteomata after superficial injury to bone, or the formation of bony outgrowth in the muscles covering the amputation stump of a bone, which are almost certainly due to the bone dust scattered by the saw; this can be prevented by the use of a suitable guard retractor when the bone is cut during the amputation. I am convinced that the bone dust, used as described, plays an important part in the welding of the main grafts to their beds in the spinal grooves.

Results of Operative Treatment.

In the majority of the twenty-eight cases dealt with in this paper the disease had previously been treated by conservative methods. There have been three deaths in the series during ten years. One patient, a young, weakly child, 4 years of age, died on the third day after operation. This is the only death ascribable to surgical interference. The child was going downhill in spite of conservative treatment and belonged to a category of patients in whom, in the light of experience, I think operation should not be performed. One adult died within two months of operation from progressive disease in the spinal cord and canal. This patient would not have been operated on if it had been appreciated that the tuberculous disease was already infiltrating the cord. Another adult died two years after operation from empyema and pulmonary complications. In another adult psoas abscess continued to increase and was treated by open incision and disinfection of the cavity. She is now convalescent, the abscess cavity being almost obliterated. She is well in general health and is steadily putting on flesh. The bone disease is apparently cured. In one child operated on when 6 years of age the disease has apparently been cured, but deformity has increased as noted above. This child was operated on just before the war began, and did not receive the supervision which is necessary in such cases, owing to the fact that the mother did not bring the child for periodic inspection.

I do not think any patient should be pronounced cured unless free from complications and able to perform the ordinary duties of life at least two years after operation. The cure of the disease in the bone should be ascertained by *x*-ray examination. The remainder of the patients in my series do, I believe, satisfactorily pass these tests.

An Illustrative Case.

Most of the points I have discussed are exemplified in the patient from whom the skiagrams here reproduced were obtained.

The boy was 15 years of age, and the operation was performed on October 9th, 1919. There was well-marked angular deformity; the grafts were fractured, the left one in two places, so as to fit the deformity. In the concavity of the curve—that is, on the right side—a small extra piece of bone was inserted. Skiagrams (Plate, Figs. 2 and 3) show well-defined callus around the fractures of the grafts, growth from bone dust, fusion of grafts to the spinal grooves, and the persistence of the grafts in their original thickness after two and a half years. All this occurred in spite of the fact that an abscess, taking origin from a lumbar transverse process, was revealed at operation in the erector spinae muscles. It had ultimately to be laid open, scraped, and sutured; a sinus persisted for seven months, but is now soundly healed. On November 21st, 1919, he developed acute appendicitis, and appendicectomy was performed. No abscess or thickening was found over or near the site of disease in the spine. He was kept on his back for nearly four months. He has grown six inches in height since the operation. There is no detectable deficiency of growth in the lumbar region, and no alteration in the deformity and its relationships with the grafts. Unfortunately no local measurements were made before the operation. He has been playing modified golf and tennis for nearly twelve months in a careful way, and now (April 29th, 1922) applies for leave to play cricket, to swim, and to indulge in salmon fishing. He states that he has never felt better in his life. He writes: "I hardly notice two or three sets of tennis at a go, and certainly not in my back. I can do any amount of dancing and that sort of thing. As for walking, I can do as much as most people."

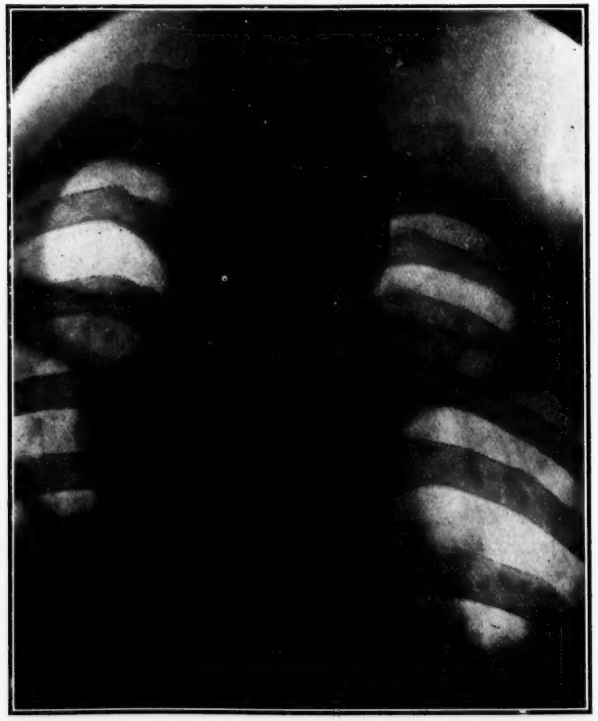

FIG. 1.—Skiagram showing persistence of grafts, in original thickness, nine years after operation. The two grafts, one long and one short, were put in the right spinal groove. The bony fusion of the grafts to the spinal arches and to each other is distinct. This patient is leading a normal life. She climbed a hill 2,000 ft. high on two occasions last summer.

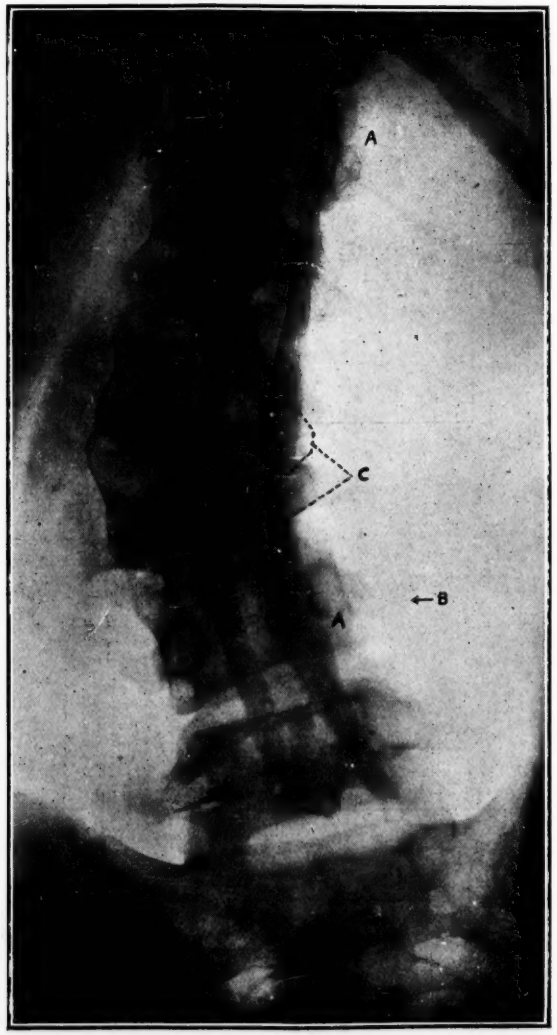

FIG. 2.—Skiagram two years after operation, showing well-defined callus around the fractures of the grafts. A, Growth of bone where bone dust was smeared most thickly. B, Caries of transverse process from which abscess in erector spinae developed. C, Callus where grafts were fractured at different levels.

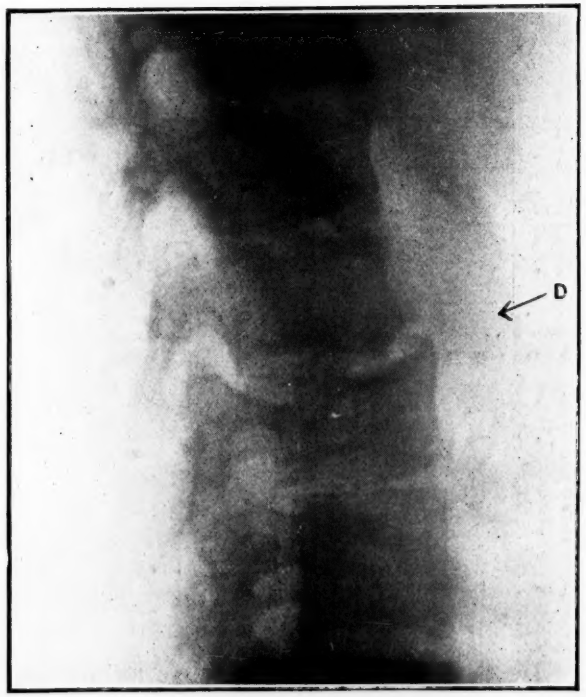

FIG. 3.—Same case as Fig. 2, showing D, focus of disease.

FIGS. 1 and 2.—Complete muscluo-spiral paralysis after tendon transplantation.

FIG. 3.—Paralytic talipes valgus after transplantation of peroneus brevis to inner side. The line of transplanted tendon can be seen.

FIG. 4.—Paralytic talipes varus. The tibialis anticus has been transplanted to the outer side and is here seen in action during dorsiflexion of the ankle.

FIG. 5.—Paralytic talipes calcaneo-cavus before operation.

FIG. 6.—Paralytic talipes calcaneo-cavus. Same foot as Fig. 5 one year after subastragaloid arthrodesis and tendon transplantation.

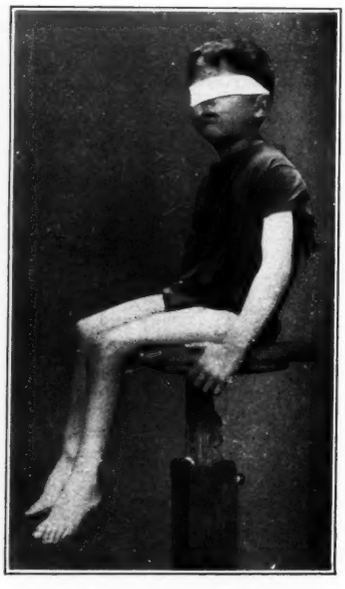

FIG. 7.—Paralysis of left quadriceps extensor. Biceps and semitendinosus tendons transplanted to patella. Leg with muscles relaxed.

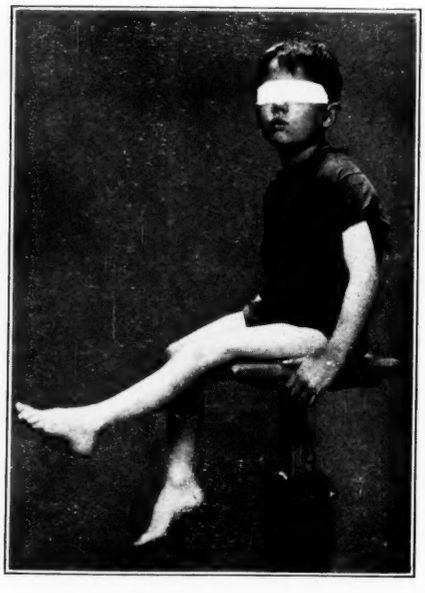

FIG. 8.—Showing extension of knee by transplanted biceps and semitendinosus.

A Clinical Lecture
ON
TENDON TRANSPLANTATION.

DELIVERED AT SALFORD ROYAL HOSPITAL ON APRIL 29TH, 1922.

[*With Special Plate.*]

BY

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THE operation of tendon transplantation, which is also known under several other names, such as tendon grafting, tendon implantation, and transference of muscle power, has gradually come to occupy a most important place in orthopaedic treatment. It is well, in dealing with such a subject as this, to refer to its origin and to mention briefly the pioneers who conceived the ideas which their successors have developed. In 1882 Nicoladoni[1] introduced the operation in the treatment of infantile paralysis; unfortunately, he appears to have first tried it in an unsuitable case, in which it proved to be unsuccessful. For this reason he did not follow up the idea any farther. Ten years later Parrish[2] in America and Drobnik[3] in Germany both revived it. Since that time the Americans, particularly Bradford, Lovett, Whitman, and Goldthwait, have worked extensively at the subject, as also have Hoffa,[4] Lange,[5] and Vulpius[6] in Germany. Our own country has taken its share in the development of the various methods: Little, Tubby, Jones, and, in this city, Montgomery, have all worked along lines which have defined the possibilities and the limits of the operation.

The transference of muscle power may be used: (1) in order to restore a movement which has been entirely lost through injury of the peripheral nerve supply or as a result of poliomyelitis; (2) to redistribute the power acting about a joint; and (3) to diminish the effect of the non-paralysed muscles which by their unopposed action are producing deformity. The removal of a distorting force is an important result of the operation, often as important as the transference of positive power. I propose to demonstrate seven groups of cases in order to illustrate the varied uses to which tendon transplantation may be put. In peripheral nerve palsy, such as occurs after division of the musculo-spiral nerve, it is possible to set down details for a complete tendon-transplantation operation which, when properly carried out and followed by correct after-treatment, can be relied upon to restore the lost function as effectively as possible. The treatment of infantile paralysis, however, is not a subject in which one can lay down definite rules as to the utilization of the various muscles as transplants. The loss of power in the muscles, in this disease, varies so much in distribution and in intensity that each case must be carefully studied in detail and the precise extent of the loss of power noted before any operative programme can be drawn up. It is not my intention to refer to the treatment of infantile paralysis in the early stages of the disease, and I have only to say that the operation of tendon transplantation is not to be advocated until it is beyond doubt that the affected muscles are paralysed beyond recovery. Correct splinting day and night with constant physio-therapy are to be utilized for a period judged to be sufficiently long. After such time, if no change is seen and no response can be elicited by any form of electrical stimulus, tendon transplantation, either alone or associated with other methods, may be advocated. A transplanted muscle does not, as is sometimes stated, increase in power by the greater demands made upon it in its new position. On the contrary, it is never so effective as in its normal place. As a result of tendon transplantation the active power present is actually lessened but more usefully distributed.

Indications for Operation.

The operation is chiefly indicated when the paralysis is limited to a group of muscles and where other muscles, of not antagonistic action, are available for transplantation. Very extensive cases with only a few weak muscles remaining are not suitable for the operation. In the case of transplantation about the ankle the operation must not be expected to do more than redistribute power. It will not produce stability of an ankle and foot which are inclined to "capsize" as soon as weight is put on them. The normal movements of the subastragaloid joints, added to those of the ankle-joint, permit such a variety of motion that they have been said to allow of what the engineer calls "universal" movement, such as is found in a ball-and-socket joint. The movements essential for locomotion are those of dorsiflexion and plantar flexion of the ankle-joint. After an attack of infantile paralysis the balance of the muscles is disturbed and the power diminished. When such conditions exist it is often found that too much uncontrollable movement is present and that the whole of this movement cannot be retained if stability is to be provided. In these cases it is therefore desirable to retain the essential movements of simple flexion and extension of the ankle and to fix the subastragaloid joints, which include astragalo-scaphoid and astragalo-calcaneal joints, by arthrodesis.

Technique.

As a preliminary measure to all tendon-transplantation operations, it is essential to correct all deformity. For example, in a case of paralytic equino-varus which has existed for some time it may not be possible, because of secondary contractions, to place the foot in a correct position. There may be contraction of the calf muscles necessitating elongation of the tendo Achillis before the equinus can be corrected; there may also be considerable shortening of the plantar fascia requiring fasciotomy in order to straighten out the sole of the foot.

Secondary changes in bones and joints following the prolonged malposition may call for wrenching and fixation in an overcorrected position for a time before the tendon transplantation can be embarked upon. For three days before operation the preparation of the skin is carried out. After thorough soap and water cleansing and trimming of nails the skin is well dried. A solution of iodine in rectified spirit (resublimed iodine 1/2 oz., potassium iodide 1/2 oz., rectified spirit one pint) is painted over the whole of the affected limb, which is then covered in a sterile cloth and bandaged. The iodine application is repeated on the day previous to operation, and, unless the operation is to take place during the early part of the morning, a further application is made on the morning of the day of operation. As to the theatre technique, all persons entering the theatre are required to wear boot-covers or theatre shoes, sterile gowns, caps, and masks, whether they expect to come close to the operation area or not. The limb which is to be operated upon is enclosed by sterile gauze, bandaged so as to cover the whole limb, including the foot or hand. The iodine solution is again applied to the gauze covering the operation area. The gauze is now cut along the proposed line of incision. After the skin incision is made skin towels are clipped to the edges of the wound so that the skin is entirely shut off. The skin knife is set aside and used only for any further skin incision which may be required; a second knife is used for the deeper dissection. Sutures, ligatures, and swabs are handled in forceps, and, so far as possible, none of these articles nor any part of the wound is touched even by the gloved fingers.

The best results are obtained by transplantation of the entire tendon, and not by transplanting slips of tendons. The transplant should be fixed as close to the insertion of the paralysed tendon as possible, suture to the actual bony insertion and periosteum giving the most satisfactory results. If the transplant is not sufficiently long to reach this position, the paralysed tendon is buttonholed and the transplant passed through and firmly sutured to it. The transplanted tendon must not be taken round corners; it must run in as straight a line as possible to its new insertion. To accomplish this, long incisions or multiple incisions are needed. Following operation, the limb is fixed by splints or in plaster-of-Paris in such a position as will ensure as much relaxation as possible of the transplanted tendon with no strain on the suturing.

After-Treatment.

Six to eight weeks' complete fixation is given, and at the end of this period removable supports are provided which can be taken off for treatment. In the physio-therapeutic department the re-education of the muscles is commenced. In some cases it proves a simple matter for the patient to produce the new action of the transplant, to be able to produce it at will, and soon to dissociate it from the action of muscle with which it was formerly associated. In other cases, particularly where antagonists have been transplanted, it is a matter of slow and patient work before such a result can be arrived at. A start is made by placing the limb in such a position that contraction of the transplant will be able to take place with no "load"

against it. Stimulation of the transplanted muscle by faradic current is carried out, and a small contraction produced. A gradual increase produces a small movement, which is demonstrated to the patient. He is taught to produce this movement voluntarily, and gradually to dissociate it. He begins to learn that a muscle which formerly everted, when he contracted it, now inverts, or that a former flexor now extends. As he becomes able to produce the new movement voluntarily a little resistance is offered to the performance of it, and so, by slow degrees, he develops the new power.

Illustrative Cases.

The first cases I wish to show you are patients in which the musculo-spiral nerve has been divided and where nerve suture was impracticable or where recovery has not taken place after suture was performed. In these cases, after trying several minor variations, I have found the following transplantation to produce the most satisfactory results:

(*a*) Pronator radii teres transplanted to the long and short radial extensors in the middle third of the forearm.

(*b*) Flexor carpi radialis transplanted to the three thumb extensors. In order to produce the best effect from this transplant I am in the habit of splitting the terminal two inches of the flexor carpi tendon. The outer half is then sutured to the extensor ossis metacarpi and extensor brevis pollicis tendons and the inner half to the extensor longus pollicis tendon. I find this arrangement to be mechanically more effective than passing the entire flexor carpi tendon through the three thumb tendons.

(*c*) Flexor carpi ulnaris transplanted to the common extensor of the fingers.

You will observe with what ease and strength the wrist and fingers can now be extended and flexed, and the way in which these patients have, with our help, educated themselves to dissociate the action of the transplanted flexors from the rest of the flexor group (Figs. 1 and 2). These results are extremely gratifying, so much so that it is safe to say that the results of a good tendon transplantation, in this class of case, are much to be preferred to a moderate recovery after nerve suture.

The second group of cases illustrates the treatment of paralysis of the adductors of the foot with overaction of the peronei and valgus deformity following anterior poliomyelitis. With these cases I usually transplant the peroneus tertius, or brevis, or both, and sometimes also the extensor longus hallucis, which generally escapes in these patients, and fix them to the scaphoid at the point of insertion of the paralysed tibialis anticus. If the extensor longus hallucis is so utilized the hallux is prevented from acquiring the "hammer" deformity which follows loss of its long extensor, by arthrodesing the interphalangeal joint in a straight line (Fig. 3).

The next cases illustrate the opposite condition to the preceding. In these there has been peroneal paralysis with consequent varus deformity following the unopposed action of the tibialis anticus and posticus. Here the tibialis anticus has been transplanted outwards and fixed to the periosteum of the cuboid. The everting action of the transplant is well seen (Fig. 4).

The fourth group demonstrates the result of transplantation in the treatment of talipes of the calcaneus variety—usually a calcaneo-cavo-valgus. In these cases it is my practice to arthrodese the subastragaloid joints and to transplant the flexor longus hallucis and peroneus longus to the insertion of the tendo Achillis and the os calcis. By means of these procedures you will see that the foot can be given a good shape and the general function very greatly improved (Figs. 5 and 6).

Talipes cavus, associated with overaction of all the long extensors of the toes consequent on loss of power in the short muscles of the sole, has been successfully treated in many cases by transplantation of the long toe extensors into the heads of the metatarsal bones. After such an operation it is seen that instead of pulling across the metatarso-phalangeal joints and forcing down the forefoot, these tendons now lift it and by their action straighten out the cavus deformity. The whole of the five tendons are transplanted, being approached through three incisions, one over the hallux, one between the second and third toes, and the last between the fourth and fifth toes. In each case the tendon is cut as long as possible and passed through a hole bored transversely through the neck of the metatarsal just behind the head. The tendon is pulled through and sutured to itself, forming a loop. The contracted plantar fascia is divided.

The sixth group of cases demonstrates the use of transplantation in the treatment of recurrent dislocation of the shoulder-joint, a method which I referred to in a paper read at a British Orthopaedic Association meeting in 1920.[7] This distressing condition, which is extremely difficult to cure, has been treated extensively by means of operations on the joint capsule, such as pleating and excision of sections, with subsequent suturing to diminish its size. In many hands these methods had not produced very satisfactory results; for a time there was improvement, but after varying periods redislocation occurred. I therefore determined to try the method of Clairmont and Ehrlich,[8] who devised an operation by which a portion of the deltoid is transplanted so as to sling up the head and neck of the humerus. The posterior strip of the deltoid, about one inch wide, is separated down to its insertion and passed through the enlarged "quadrilateral space" of the axilla, and the tendon fixed high in front of the joint. Clairmont fixed it to the separated edges of the anterior part of the deltoid. In performing the operation it seemed to me that the tendon would lie closer to the joint and give it more support if sutured up to the subscapularis tendon, and this modification I always carry out. I have performed this operation on seven occasions during the past four years; the most recent case was done seven months ago. With one exception there has been no recurrence. In that case the patient was a professional Rugby football player who came down on the outstretched arm and redislocated the shoulder. He had previously had a capsule operation which was followed by recurrence in a few months. After the transplantation he played football for a whole season, during which the joint remained stable before the unfortunate fall, which would have been sufficient to dislocate a perfectly normal shoulder.

The last group of cases demonstrates the transplantation of hamstring tendons to the front of the knee to replace a paralysed quadriceps extensor. Tubby reports, in his well-known book, that in nearly half the cases in which he performed this operation there was recovery of power of full extension of the knee both in standing and sitting. Many surgeons, however, even amongst those of large experience, are unconvinced of the good results which may be achieved by this transplantation, as is evidenced by the following quotation from a lecture given by H. A. T. Fairbank, which was reported in the BRITISH MEDICAL JOURNAL of April 9th, 1921:

"I am open to conviction, but I have still to see a shifted biceps contract alone at will and produce extension of the knee-joint. I have seen it contract with the flexors and interfere with the action of its fellows, but this is a very different thing from this muscle producing extension at the will of the patient."

Several patients I now show to you demonstrate the power of the transplanted biceps and semitendinosus to act voluntarily, producing full extension of the joint. They are able to hold it in this fully extended position, bearing the weight of the leg and foot, for periods varying from half a minute to two minutes, which is as long as you or I would care to hold out an extended knee (Figs. 7 and 8).

I think that the cases I have now shown you provide convincing evidence that tendon transplantation has a definite place amongst our orthopaedic methods, and a demonstration of the fact that, in properly selected cases, it is an operation which can be strongly recommended to our patients.

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IN connexion with the recent articles on the attempt to climb Mount Everest and the use of oxygen by the climbers, we have received a letter from Messrs. Oppenheimer, Son, and Company, Ltd., suggesting that the apparatus called oxinhalator, made by them, might be of use. They furnish a reference to the *Medical Annual*, 1910, from which it appears that the substance used to furnish oxygen ("Sodox") is a peroxide of sodium, which possesses the property of emitting absolutely pure oxygen in contact with water. The apparatus appears to be an adaptation of one invented by M. G. P. Jaubert, and first shown to the Academy of Sciences in April, 1912, by Professor Moissan. It has useful applications under ordinary atmospheric conditions, and was, we learn, used in the Pike's Peak expedition to yield small quantities of oxygen, but for the task of climbing Mount Everest we are advised that the weight would be too great, and that the water needed to decompose sodox would be sure to freeze.

FURTHER EVIDENCE OF THE VALUE OF THE COMPLEMENT FIXATION TEST IN PULMONARY TUBERCULOSIS.

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IT is now nearly twenty years since Bordet and Gengou first demonstrated the presence of antibodies capable of uniting with tubercle bacilli and fixing complement in the serums of tuberculous animals. Since then numerous attempts have been made to utilize this fact in order to obtain a reliable biological test for tuberculosis in human beings, and many different methods of performing such a test have been described. Varying results have been obtained from these methods, but by none of them do the results obtained in definite cases of pulmonary tuberculosis, 10 to 30 per cent. of which have given a negative result, appear to have been sufficiently accurate to cause the adoption of the test as a means of diagnosis for early tuberculosis.

A method of performing the test was described by one of us (A. L. P.)[1] in 1920; this test has been made use of frequently in both definite and doubtful cases for over two years by both of us. We have previously shown that a positive complement fixation test is obtained in 98 per cent. of cases with tubercle bacilli in the sputum. We have, moreover, subsequently collected evidence which suggests that this small error of 2 per cent. occurs in cases of very sudden onset and running a very rapid course, in which presumably the tubercle bacilli are so virulent and the invasion so massive that those cells of the body which are responsible for the production of the complement fixing substances are overwhelmed with toxins and unable to respond to the call made upon them. In the rare cases in which, with symptoms due to tuberculosis, the test is negative at first but later becomes positive it is reasonable to assume that a sufficiently long interval has not elapsed from the time of infection for the complement fixing substances to be developed.

We have also shown[2] that in a series of controls consisting of healthy persons or patients suffering from diseases other than tuberculosis the test was negative in 98.5 per cent.

Further, in a series of 50 Brompton Hospital cases with symptoms strongly resembling those of pulmonary tuberculosis, and sometimes even with apical signs, giving a negative result to the test, 49 showed no further evidence of tuberculous infection ten to twenty months later.[3] The one exception was a man who was living for a year subsequent to his first examination with a brother suffering from consumption, and it is reasonable to suggest that he became infected while under observation. The test was positive at the second examination six months before tubercle bacilli were found in the sputum. In the other 49 cases the test was negative at the second as well as at the first examination.

RECENT EVIDENCE.

The subsequent history of suspicious cases which give a positive result will now be shown to give further evidence of the value of the test, in this instance in the early positive diagnosis of pulmonary tuberculosis.

For this purpose we have recently investigated 50 of our Brompton Hospital cases in which the complement fixation test was positive in 1920 or early in 1921, and in which tubercle bacilli had never been found in the sputum, as far as we were able to determine, prior to the testing of their blood. They were unselected cases, and were consecutive so far as the above condition of a previous absence of tubercle bacilli in the sputum and a positive test were concerned.

Of the 50 cases a reply was received from relatives that 8 had died. None of them died while in-patients of the hospital, so *post-mortem* evidence is not available. In 3 cases tubercle bacilli had been found in their sputa. The result of the examination of the sputa in the other 5 is not known. These 8 deaths can be compared with the 2 deaths in the 50 complement fixation negative cases previously published, both of which showed malignant disease, at the necropsy, as the cause of death.

Of the remaining 42 cases 29 attended for re-examination, 10 failed to reply, and 3 replied but were unable to attend. No less than 13 out of these 29 cases had been proved definitely tuberculous between the first and second examinations by the finding of tubercle bacilli in their sputa; the notes of 5 of them were as follows:

Case 1.—L. E. June, 1920: Complained of cough, sputum, and loss of weight for three weeks; weight 7 st. 10 lb.; sputum streaked with blood; sputum negative three times. Complement fixation test positive. May, 1921: Streaks of blood again; weight 8 st.; sputum negative. Complement fixation test positive. September, 1921: Sputum positive; weight 9 st. 10 lb. The complement fixation test was still positive in May, 1922.

Case 2.—E. M. May, 1920: Complained of cough, sputum, slight haemoptysis; loss of weight; sputum negative. Complement fixation test positive. August, 1920: Sputum positive. May, 1922: Still cough and sputum; complement fixation test positive.

Case 3.—G. W. June, 1920: Complained of cough, sputum, and loss of weight; sputum twice negative. Complement fixation test positive. July, 1920: Sputum positive. May, 1922: Still cough and sputum. Complement fixation test still positive.

Case 4.—V. D. May, 1921: Complained of being languid; no cough; no sputum; impaired note and bronchial breathing at left apex. No crepitations heard. Complement fixation test positive. February, 1922: Still feels languid; cough and sputum present; crepitations at left apex; sputum positive. Complement fixation test positive.

Case 5.—E. C. June, 1920: Complained of cough and sputum. Complement fixation test positive. May, 1921: Has been in bed four months with pleurisy; two severe haemorrhages; sputum twice positive in sanatorium. Complement fixation test positive.

An analysis of the 16 as yet unproved cases shows that 5 were cases of pleurisy when first examined; in 3 no sputum was available; in 8 there were still symptoms, and in some further physical signs were present. But, however suspicious of pulmonary tuberculosis physical signs may be, they cannot be offered as definite evidence that the tubercle bacillus is the cause of the pathological change in the lung, as there is probably no combination of physical signs absolutely pathognomonic of pulmonary tuberculosis. In 2 cases there were no symptoms at the second examination. The notes of 5 further cases to illustrate these as yet unproved cases are as follows:

Case 6.—E. S. July, 1920: Pleurisy with effusion; weight 11 st. 2 lb.; sputum negative. Complement fixation test positive. Went to sanatorium. June, 1921: Physical signs of thickened pleura. Complement fixation test positive. November, 1921: Feels fairly fit; cough for few weeks; sweats a good deal; sputum negative. Complement fixation test positive.

Case 7.—C. H. November, 1920: Complained of haemoptysis, about 10 ounces on two occasions; no abnormal physical signs; no sputum available. Complement fixation test positive. April, 1922: Complains of feeling tired; no more haemoptysis; impaired note and crepitations at right apex; no sputum available. Complement fixation test positive.

Case 8.—E. M. R. September, 1920: Complained of tiredness and loss of weight: fine crepitations at both apices; sputum negative. Complement fixation test positive. July, 1921: Signs as before. Complement fixation test positive. May, 1922: Feels fairly well; cough and sputum present, but latter not obtained for examination. Complement fixation test positive.

Case 9.—E. N. K. July, 1920: In-patient for diagnosis; cough; sputum. May, 1921: Complement fixation test positive. February, 1922: Feels better; at light work; night sweats severe; sputum negative on fifteen occasions since first seen. Complement fixation test positive.

Case 10.—C. L. July, 1920: Cough; sputum streaked with blood; loss of weight; temperature 99.2°; crepitations at right apex. June, 1921: Feels well; no sputum. Complement fixation test negative.

It will be seen that it is difficult to state the percentage of these cases giving a positive test in conjunction with pulmonary symptoms, in which tubercle bacilli were subsequently demonstrated in their sputa, owing to the death of some and the difficulty of tracing others; but of those alive and able to attend hospital 13 out of 29, or 44.8 per cent., had tubercle bacilli in their sputum within a period of not more than two years after the test.

Discussion.

First we can say definitely that the test is positive before the tubercle bacilli can be demonstrated in the sputum.

Exactly what interval elapses between the invasion of the lung and the development of a positive test cannot be determined in human beings owing to the uncertainty of the date of infection. Since, however, pulmonary tuberculosis is as a rule a disease of gradual onset, the blood, generally speaking, reacts positively by the time symptoms are present. In a few cases in which the onset is more sudden—as, for instance, with an haemoptysis or pleurisy without any history of previous ill health—it is necessary, when such a case gives a negative result, to repeat the test after an interval of two or three months before definitely excluding tuberculosis.

Meaning of a Positive Result.—The presence of pulmonary symptoms with a positive test must be regarded as an indication of active pulmonary tuberculosis.

Duration of a Positive Reaction after Arrest of the Disease.—How long the test remains positive after arrest of the disease it is impossible to say, as there is no method of determining accurately the exact date at which the lesion has become arrested. Two of the cases in the above series offer evidence that the test does become negative after the disease is arrested. Both these cases had been free from symptoms for about a year. One case when seen in 1920 had a pleurisy with effusion from which 10 c.cm. were aspirated. He was sent to a sanatorium, where he remained for seven weeks. He brought up a pint of blood shortly after leaving the sanatorium, and entered another sanatorium for fourteen weeks. Since then for a period of sixteen months he has felt quite fit, and is now two and a half stone heavier than when seen on his first visit to the hospital. The clinical condition agrees with the negative test in these two cases, and we regard them both as arrested cases. A temporary freedom from symptoms does not, of course, necessarily indicate complete arrest of the disease. This is well illustrated by one of the cases in which the test was positive three times over a period of twelve months. In this case the patient was at one time during this period entirely free from symptoms, but later the symptoms returned and eventually tubercle bacilli were found in her sputum. We are collecting evidence bearing on this point of the duration of a positive reaction after arrest of the disease, but it must of necessity be slow in accumulating; so far it would appear that the period may not be more than twelve months.

The Value of Early Diagnosis.—It is generally accepted that early diagnosis is the key to successful treatment. All the 50 cases here published were treated as cases of active tuberculosis of the lung or pleura. Though the results are far from satisfactory, it is possible that some of the cases have been prevented by early treatment from progressing to "open" tuberculosis.

The Question of Latency.—The above considerations lead to the question of latency; 98.5 per cent. of our control cases gave a negative result to the test. All *post-mortem* evidence goes to show that in a certain number of these cases, variously estimated as from 10 to 97 per cent., old tuberculous foci existed. In what proportion of these old foci living tubercle bacilli would have been found we have no evidence upon which to form a definite opinion, but it may be said that they would have been found in a certain number. The explanation that we have to offer of the negative result to the test although tubercle bacilli may be present in the body is that, the formation of the complement-fixing substances being in all probability a property of the cells of the body, they are only formed when the focus which contains the bacilli is not shut off from the general circulation. In these old foci the bacilli when present may be entirely shut off from the general circulation by fibrous tissue resulting from chronic inflammatory processes, and so no complement-fixing substances are formed. We have shown that a positive reaction when the lesion is active does not mean a positive reaction ever after, as stated by others. In this lies the greater value of the test, and, taken in conjunction with the symptoms, it is an almost infallible guide to the presence or not of active tuberculosis.

We are again indebted to the lady almoner of the hospital, to whom we wish to express our gratitude for her valuable assistance in tracing the patients and asking them to attend.

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THE PATHOLOGY OF FOETAL MACERATION.*

A STUDY OF 24 CASES.

BY

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IN the first 100 examples of stillbirth examined there were 24 cases of foetal maceration; it is the results of the examination of these that it is proposed to discuss in this communication. Various grades and degrees of the condition were seen, from mere laxness of the limbs to an almost pulpy state of the foetus, with the skin almost entirely denuded and the cranial bones loose inside the scalp. In passing it may be noted that, as 24 cases were macerated and 52 asphyxiated, in 76 per cent. of the first 100 cases of stillbirth the evident condition present on examination was either maceration or asphyxia.

Of the 24 cases 22 were premature, ranging from twenty-four to thirty-six weeks. This is only what one would expect from a general consideration of the subject. The two cases born at full time were only slightly macerated, and labour came on in these cases at or about the expected date. Both these latter cases were eclamptic. The associated conditions in the 24 cases were:

Maternal albuminuria	10 cases
Syphilis	6 ,,
Maternal eclampsia	4 ,,
Extensive placental infarction ...	4 ,,

External Maceration.

From these figures it appears that, in our experience, albuminuria is the condition most commonly associated with maceration of the foetus; further, syphilis was present in only 6 (25 per cent.) of the cases. Now in the cases of syphilis previously considered maceration was found present in only 6 out of 14 (43 per cent.); therefore considering both these sets of figures we come to the conclusion that maceration alone is no index of foetal syphilis and is much more likely to be associated with albuminuria.

In this series all grades of maceration were present, allowing the various stages of the process to be studied. The first change observable after the death of the foetus was solution and disappearance of the vernix caseosa; in the very slightly macerated cases vernix was present in the flexures of the groins and knees, where it had, for the time being, been shielded more than in the more exposed parts from the solvent action of the liquor amnii.

There can be little doubt that the first action of the liquor amnii on the dead foetus is to dissolve the vernix caseosa; in life it acts as a coat of armour against such action; this is aided by the fact that in life the vernix is continually being secreted and renewed by the glands of the skin, an action which, of course, stops at death. Later on the superficial layers of the skin become waterlogged and the connexion of the epidermis with the deeper layers becomes loosened, so that on rubbing, or even at the merest touch, flakes of epidermis peel off, exposing the reddened and shiny underlying corium. In time this also becomes affected, and in the more advanced cases the skin looks as though eroded in patches, the underlying tissues being exposed here and there.

These changes are most marked in the abdominal wall, scrotum, and limbs, and least on the head and scalp; indeed it is only in the most advanced examples of maceration that any desquamation at all is present in the scalp.

Internal Maceration.

Contemporaneously with these external changes the internal organs are also undergoing changes—internal maceration—which in general terms may be described as consisting of tissue lysis resulting from the uncontrolled action of enzymes on the parenchyma of the various organs, the whole process being aseptic.

In the skeletal muscles such action is recognized at the very earliest stage, even before desquamation is evident; general slackness and limpness of the body and limbs result, allowing the macerated foetus to be bent and twisted in any direction. In the brain the earliest naked-eye change consists of a brown staining of the dura mater, which is often slightly thickened and feels oedematous. The surface of the

* Part of a report on "The Etiology and Pathology of Stillbirth" to the Medical Research Council, 1922.

cerebral hemispheres also becomes stained brown from a diffusion of haemoglobin due to lysis of the red blood cells. Later the cerebral tissue becomes soft and easily lacerable, and later still quite diffluent, so that the brain now appears as a semifluid, grumous, brownish mass in which no differentiation between grey and white matter is possible and which cannot be removed intact. In the most extreme cases solution of the cranial sutures occurs, allowing the cerebral matter to run out and infiltrate the scalp, while in one of the specimens the scalp had become eroded at one point at the vertex and the fluid brain matter had escaped externally.

There is a great tendency in these cases to extravasation of blood-stained fluid into any body cavity or loose tissue space, and so the pleurae, pericardium, peritoneum, scrotum, and subcutaneous tissue, especially over the vertex of the scalp, were, in a well-marked case, almost invariably the seat of haemorrhagic effusion due to lysis of capillaries and of red blood cells, thus allowing the haemoglobin-stained fluid to be passively effused.

In all the other organs two changes were found: (1) softening of various degrees, and (2) a uniform brown staining, reducing all the organs to a uniform colour and obliterating the difference between cortex and medulla in each case.

1. This was present in all degrees corresponding to the degree of maceration; it was, however, always present to some degree and was demonstrated on attempting removal of the organs, when they would tear in the fingers unless very carefully handled. In a case of moderate degree softening would be least marked in the heart and lungs and most evident in the brain and liver.

2. The more advanced the maceration the more marked was this change. The process consists of a haemolysis with diffusion of altered haemoglobin throughout the various organs. This was present in all the organs, even in the intestines, although less marked there than elsewhere.

The Bones in Maceration.

On sectioning the long bones the main naked-eye changes were found at the extremities. Here the epiphyseal cartilage had lost its normal bluish-white glistening appearance and had become dull and opaque, with a tendency to brownish discoloration, which, however, was never so marked as in the case of the internal organs. But at the junction of the osseous tissue of the shaft and the cartilage of the epiphysis the line of demarcation was not as sharply defined as usual; it appeared as though the osseous tissue had become slightly eroded or digested along this junction, and it was easy in any case to separate the epiphysis from the shaft, the junction being softened. Now, this irregularity of the epiphyseal line is present in some cases of syphilis—chondro-epiphysitis—but here it is due to irregular *ante-mortem* growth of spicules of bony tissue into the cartilage, and close inspection will show the difference between the two conditions. The point to be emphasized is that a condition superficially resembling the chondro-epiphysitis of syphilis is to be found in the vast majority of foetal bones macerated from any cause, and that unless care be exercised in differentiating this condition from true chondro-epiphysitis a large number of cases will be wrongly regarded as syphilitic. In only one of the cases of syphilis was true chondro-epiphysitis well marked. In two cases — both premature — blood-stained effusion was present in joints; in one case the knee and in the other the hip was affected. In every case the ligaments were weakened and softened, sometimes markedly so.

The Placenta in Maceration.

Examination of the placenta was of the utmost value in deciding the cause of the foetal death. In eclamptic placentae large areas of intra-placental haemorrhage with extensive red and white infarctions were present in every case of this series. In albuminuria also similar appearances, but usually not so extensive or advanced in degree, were present, and in both of these conditions there were in a large proportion of cases old or recent haemorrhages on the uterine surface of the placenta.

These utero-placental haemorrhages constituted a marked feature in this class of case, and in one example there was a large cup like depression excavated from the uterine surface and full of clot. In these cases it was usual for the intra-placental haemorrhage in infarction to be in that part of the placenta related to the surface haemorrhage. In a third class of case large white and red placental infarctions were also present, but in these cases there was no maternal albuminuria; here also in several examples retroplacental haemorrhage and clots were present.

Now, placental infarctions have been shown by Eden, Williams, and others to be normally present towards the end of pregnancy, and, indeed, to form one of the changes preparatory to the placenta separating itself from the uterus. Eden regards infarctions as signs of senility in a short-lived organ, and is of opinion that they begin to form as early as the seventh month of gestation. But in the cases under consideration (1) the infarcts were very large, and *en masse* must have occupied a considerable area of the placental tissue available for foetal nutrition; (2) intra- and retro-placental haemorrhage cannot be looked on as normal changes; and (3) these changes were in almost every case well advanced by the seventh month, and not merely starting to appear then.

For these reasons, then, extensive infarction and haemorrhage in a premature placenta is to be regarded as a pathological condition and likely to be associated with the death and subsequent maceration of the foetus.

In the syphilitic placenta the appearances were quite different. In all these cases the placentae were thick and pale and usually of an even and solid texture. *In no syphilitic placenta was any infarction or haemorrhage present.* This is a most important differential point in seeking for the cause of the intrauterine death. The syphilitic placentae examined tended also to be larger and heavier in relation to the foetus than normal; this was never so marked in the cases under consideration as some authorities have found, but the presence of these features in association with pallor and increased thickness, which were constant features, strengthened the diagnosis of syphilis.

There is another naked-eye appearance to be noted, and it is common to all macerated placentae whatever be the cause of the foetal death prior to maceration; this consists of a greenish, slimy appearance of the amniotic surface of the placenta and membranes, and would appear to be due to continued contact with altered amniotic fluid. This also is described by some writers as being associated especially with syphilitic maceration, but in this series it was quite as well marked in the non-syphilitic cases.

The umbilical cord showed slackness; this was the first change noted, the normal spiral twisting having become undone and straightened out. Later on swelling, oedema, and congestion, as shown by a uniform dull red coloration, became evident, and this change was more marked at the foetal end of the cord.

Microscopic Findings.

On microscopical examination of the various organs the first change seen was a failure of the cell nuclei to stain properly; the outline became blurred and the chromosomes disappeared. The cell cytoplasm then became affected and in its turn stained irregularly, but this change appeared subsequently to the nuclear changes described. This cloudy or granular degeneration progressed so that in time the nuclei became invisible, while the cell showed irregular outline and stained very faintly indeed; in later stages still the microscopic field showed a mass of irregularly stained tissue in which the cell bodies were differentiated from the intercellular material only with difficulty. This was the appearance seen, for example, in albuminuric cases. In syphilitic cases—and in these maceration was seldom so advanced as in the others—the pericellular cirrhoses, as described in the section of the report dealing with syphilis, were seen, and in these cases cell degeneration was not so far advanced for the degree of maceration as in the other varieties of cases.

Again, in syphilitic cases staining by Levaditi's method usually demonstrated the presence of spirochaetes in the organs, especially in the lung and liver. While this description would apply generally to the various organs, in the individual organs certain special appearances were recognized.

In the *lungs* oedematous infiltration of the interalveolar tissue with desquamation of the alveolar epithelium was seen; along with this generalized capillary dilatation and irregular extravasation of red blood cells into the tissue spaces and also into the alveoli were present.

In the *liver* the changes described were well shown, but along with these the sinusoids were seen to be dilated, and many red blood cells in various stages of degeneration were present, infiltrating the interlobular and intercellular spaces.

In the *kidneys* the earliest changes were found in the glomeruli, which showed cloudy swelling going on, in the later stages, to almost complete disintegration, the glomeruli becoming shrunken masses staining badly and practically structureless. The intertubular connective tissue also showed

oedema and thickening, while desquamation of the tubular epithelium following granular degeneration was usually present in varying degrees.

In the *skin* the first change observed consisted of a swelling of the superficial layers of epithelium with inability of these cells to take up stains properly. This swelling would appear to indicate infiltration of the cell with fluid, and these changes progressed until the cells lost practically all structure and were cast off, the separation occurring just at the junction of epithelium and corium. In the latter layer the tissue fibres stained irregularly, and were separated by oedematous infiltration, while marked dilatation of capillaries with extrusion of red blood cells was also seen here. The epithelium of the sweat and sebaceous glands, and also of the hair follicles, retained their normal appearance for a surprisingly long time, and in regions where such structures were plentiful—the skin—the degenerative changes described were never so marked as in skin from other parts of the body.

The *placenta* in syphilitic cases presented the microscopic appearances usually described in this condition: crowding of the field with villi, small intervillous spaces, the absence of blood vessels from the villi, or if present few in number and small, and the structure of the villi consisting of a uniform and loose areolar tissue. In the placentae showing infarctions and haemorrhages changes of two kinds were seen: (1) Fibrinous deposit between the villi, gluing them together as it were and associated with degeneration and disappearance of the Langhans's cells covering the villi. At a later stage the villi appeared as degenerated, light-staining areas embedded in a dark mass of fibrinous deposit. This is the type of infarction described by Eden and Williams as a normal process. (2) In the infarctions associated with uteroplacental haemorrhage the first change observed was dilatation of the vessels in the villi, so that this part of the placenta looked red to the naked eye (red infarction); but in some cases this dilatation was so great that actual haemorrhage had occurred (haemorrhagic infarction or placental apoplexy). The primary event is considered to be the utero-placental haemorrhage which had suddenly interfered with the nourishment of the placenta and so had inflicted an acute vascular injury the reaction to which was dilatation of the vessels or even a haemorrhage into the substance of the placenta. The villi concerned, being separated from their uterine attachment and deprived of their nourishment, degenerate and are finally replaced by a fibrous scar, which develops from the periphery towards the centre of the involved area. These changes have been fully worked out by Young and others. Space will not permit a full consideration of these placental changes in relation to foetal death; they will be made the subject of a later contribution. Suffice it to say that in these cases intrauterine death followed by maceration is considered to be brought about by (1) the ablation of a certain amount of placental tissue sufficient to interfere with foetal nourishment, and (2) possibly by the absorption into the foetal (as Young has suggested in the case of the maternal circulation) circulation of certain degeneration products from the infarcted and necrosed areas.

In this paper, which is intended merely as a preliminary contribution to the study of this subject, the findings and the deductions from them are stated shortly. It would appear that maceration is brought about by soddening of the unprotected foetal skin by the liquor amnii, accompanied by an autolysis of the internal organs by enzyme action.

CONCLUSIONS.

1. Maceration is the result of retention of the dead foetus *in utero*, whatever be the cause of the death.
2. Maceration alone is no sign of the presence of syphilis.
3. In the investigation of any macerated foetus it is essential to have the placenta for examination also.
4. The bony changes in any macerated foetus bear a superficial resemblance to the chondro-epiphysitis of syphilis and have to be carefully differentiated.
5. The microscopic findings indicate a process of autolysis of the constituent cells of the various organs with oedema of the interstitial tissue and extrusion of red blood cells.
6. In the syphilitic cases the placenta will be thick and pale, while in the other cases haemorrhages and infarctions will often be present.

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RECOVERY OF VISION AFTER INCIPIENT PANOPHTHALMITIS FOLLOWING CATARACT EXTRACTION.

BY

LIEUT.-COLONEL H. KIRKPATRICK, I.M.S. (RET.).

THE recovery of useful vision in an eye which suffered from an early and virulent pyogenic infection after an operation for senile cataract is sufficiently rare to render it worth while to place the following case on record:

Mr. R., aged 69, was operated upon for senile cataract of the right eye on October 4th, 1921. Combined extraction was performed, the nucleus being easily delivered beneath a "bridge flap" of conjunctiva; the shreddy, shrinking cortex was readily washed out by the irrigator and the iris well replaced.

On the second day the eye was quiet, with a wide, black pupil, and the anterior chamber had re-formed. That night, in spite of having been warned, the patient got up unaided to pass water, and interfered with his dressings in order to see what he was about. Next morning the eye was still quiet, with a wide, black pupil. On the fourth morning a muco-purulent discharge was present, with conjunctival injection and chemosis. Aluminium goggles were substituted for the bandage, silver nitrate drops (0.75 per cent.) were instilled, followed later by argyrol. The chemosis and discharge increased during the day and the lids became greatly swollen. Eye baths of magnesium sulphate lotion (12 per cent.) were now ordered to be used for five minutes every two hours. On the morning of the fifth day, in addition to the swelling of the lids, the chemosis, and the purulent discharge, it was found that the lips of the wound were yellowish and infiltrated, and that the iris was cloudy; atropine was instilled and urotropine, 15 grains every three hours, was ordered. The aqueous became very turbid during the day. On the sixth day the infiltration of the section and the exudation in the anterior chamber had increased, but the purulent discharge and the swelling of the lids had diminished; 1 c.cm. of mixed catarrhal vaccine was injected, pneumococci and staphylococci having been found in the discharge. The intensity of the inflammation subsided from the sixth day, and on the eleventh day the eye was free from swelling and chemosis, but a deep exudate and ciliary congestion remained. Under the influence of hyoscine, etc., the pupil kept moderately dilated, though blocked by the deep inflammatory exudate; during the fifth week, however, contraction of the exudate began and the pupil became gradually drawn up. Some slight congestion persisted during the next two months, but the iris crypts were clear and corneal deposits were absent. Four months after the operation the eye was quiet, the ocular tension subnormal, the iris bombé, and the pupil drawn up and blocked. The projection remained good. An iridotomy after Ziegler's method was performed five months after the extraction and a wide, black pupil was made. The immediate visual result, however, was poor, since there was a considerable amount of opacity in the vitreous; this rapidly cleared after injections of mercury cyanide, and three months later the corrected vision was 6/12.

I have no hesitation in attributing this rather remarkable abortion of panophthalmitis and recovery of the eye very largely to the thorough use of eye baths of magnesium sulphate lotion. This form of treatment for purulent inflammations of the conjunctiva, cornea, and opened eyeball was introduced at the Madras Ophthalmic Hospital some eight years ago, and it has always been found of the greatest use in such cases. Although some surgeons stated, at the meeting of the Ophthalmological Section of the British Medical Association last year, that they had used it with benefit in the treatment of ulcers of the cornea, its great value as a remedy for septic conditions of the conjunctiva, cornea, and opened globe does not appear to be as widely known as it deserves to be. Its action in gonorrhoeal ophthalmia is especially striking. One of the chief dangers in the latter disease, as we all know, is ulceration of the cornea; this is greatly favoured by the intense chemosis or brawny oedema of the bulbar conjunctiva; the magnesium sulphate lotion appears to exercise a powerful osmotic action through the inflamed membrane, and its use is almost always followed by a very marked reduction in the chemosis and by the restoration of a healthy circulation in the conjunctiva.

Since using this treatment in combination with urotropine and vaccines, I have seen no eye lost from gonorrhoeal ophthalmia which had not reached a hopeless condition of corneal ulceration before seeking advice. Major Wright, the present superintendent of the Madras Ophthalmic Hospital, states in the annual report of the institution for the year 1920 that, using this treatment, not a single eye was lost from gonorrhoeal ophthalmia in the course of the year. If is, of course, essential that the lotion should be thoroughly applied, and to ensure this the eye bath should be used with the patient in the reclining position, and he should be instructed to keep opening and shutting his eye in order to maintain the

circulation of the fluid in the recesses of the conjunctival sac. Each application should last for at least five minutes, and should be repeated within two hours in bad cases. The administration of urotropine is a valuable adjuvant, as this is excreted in the tears and acts as a mild disinfectant.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MENINGITIS DUE TO PFEIFFER'S BACILLUS.

E. S., female, aged 7 months, was admitted to the Derbyshire Royal Infirmary on March 13th. The history was that the child had been ill for seven days with what seemed at first to be an ordinary cold. On the third day of the illness a red pin-point rash came out on the chest and back, and the child began to vomit. The rash disappeared quickly, but vomiting persisted, and the child began to have attacks of screaming.

On admission the temperature was 102° F. and the pulse uncountable; the child looked very ill, was fretful and restless; the head was markedly retracted; lifting the head off the pillow made the child scream; the fontanelle was bulging; the pupils reacted normally; there was no ptosis or strabismus; abdominal reflexes active; knee-jerks normal; no Kernig's sign; Babinski doubtful. The child had a very harsh and troublesome cough; breath sounds were harsh, and there were moist sounds all over both lungs.

Lumbar puncture showed the cerebro-spinal fluid to be under great pressure and that it was purulent. The cells were mostly polymorphonuclear, and a Gram-negative bacillus was also seen. Some cerebro-spinal fluid was sent to the county laboratory for culture.

The temperature ranged from 102° to 103° F., and the child died twenty-one days after admission to hospital.

The bacteriological report stated that cultures were obtained on human blood agar, ox serum, potato, egg, and plain agar, and subcultures on human blood agar. The bacillus showed a great variety of form—cocco-bacillary, bacillary, strepto-bacillary, and club-shaped forms. No growth was obtained on any of the above media anaerobically. The organism from cultural and microscopic appearances was proved to be the *B. influenzae* of Pfeiffer.

I am indebted to Dr. Barber, senior physician to the hospital, for permission to publish this case.

R. L. MANSON, M.B., Ch.B.Aberd.,
Late House-Physician, Derbyshire Royal Infirmary.

THE CREOSOTE TREATMENT OF PNEUMONIA.

IN the JOURNAL of June 10th (p. 940) Dr. F. C. McCombie relates his experience of the treatment of lobar pneumonia by potassium iodide and creosote, and gives results in a large number of cases. The slightly diminished percentage (2.2) of deaths during the eight months' trial of this treatment (with considerably fewer cases than in the previous year) was not an encouraging result, and does not support the claim for its specificity. My own experience with this treatment during the influenza pandemic of 1918–19 was equally discouraging, for though occasionally it seemed to do good it was by no means reliable, and I concluded that very little creosote is absorbed by the gastro-intestinal mucosa, and even that little must pass through the portal circulation before reaching the heart and lungs.

I have since adopted another and, I believe, more efficacious method of using creosote—namely, by inunction into the axilla. It is a highly vascular and absorptive part, and numerous veins, venules, and lymph ducts pass beneath the thin integument at a point close to the thoracic duct and large veins emptying directly into the right heart.

The mode of administration is very simple, consisting of the rubbing into either or both armpits of about 1 drachm of a creosote ointment about every four hours. I usually prescribe the ung. creosoti B.P.C., 33 per cent. creosote for adults and 25 per cent. for children. As the ointment has a tendency to chafe the skin it is well to use the right and left axillae alternately. The arm on the side treated should be brought across the chest to ensure absorption.

I have had very gratifying results with this method of treatment in both lobar and lobular pneumonia. When the case is seen early it virtually aborts the attack. Even when the disease is established the results are, in uncomplicated cases, remarkable. Usually the temperature falls to or below normal within twenty-four hours, the breathing becomes slower and easier, and toxic manifestations disappear. The usual physical signs are still to be found for several days after commencing treatment, but resolution begins earlier, and the affected lung clears up within a week.

I regret I am unable to publish particulars of cases treated during the past three years, but without making extravagant claims for this method I can say that it has rarely failed in my hands.

London, N.W. W. A. M. SWAN.

ANTIMONY IN YAWS.

I HAVE read with great interest Dr. Cawston's description in the BRITISH MEDICAL JOURNAL of February 18th (p. 266) of cases of syphilis successfully treated by antimony, and, it being one of my duties in this station to inject intravenously some 7,000 or 8,000 cases per annum of acute and so-called tertiary yaws, I was at once struck by the immense reduction of expense that might be effected if such a cheap drug as tartar emetic could be substituted for galyl and novarsenobillon, the two preparations that I have been using for the last twelve months. I accordingly took a few ordinary adult cases of acute yaws, for practical purposes exactly like Figs. 89 and 90 in Manson's *Tropical Diseases*, and gave them intravenously 1 grain of tartar emetic daily, no local applications being used; this was continued for from eight to ten days, one patient complaining of slight headache and nausea on the seventh, eighth, and ninth days; no amelioration whatever was noted; in fact, my assistant considered the fetor to be slightly increased. The patients, accustomed to see their friends cured within three days by one injection of galyl or novarsenobillon, became restive and had all insisted upon their discharge by the tenth day. No cases of (so-called) tertiary yaws were tried with the antimony treatment, the presumption being that if the very curable acute yaws was not relieved this very much more resistant form could not be benefited.

This investigation, though incomplete, is, I think, of interest, and I hope that Dr. Cawston may have an opportunity of also investigating the action of antimony in yaws in South Africa, where I have seen (in the Western Transvaal) many hundreds of acute cases of yaws and a corresponding number of ulcerations, periostitis, etc., following. Since 1891, however, I have noticed myself, and have heard from others, that the number of cases has greatly diminished.

I wish to thank Dr. Gilks (principal medical officer of this colony's medical service) for permission to publish this note, and also to subassistant surgeon Wilayat Shah for assisting in conducting the investigation.

Fort Hall, British East Africa. F. T. AUDEN, M.D.Edin.

ACUTE TORSION OF A HYDROSALPINX.

THE following case appears to be one of such rarity that its publication seems justified.

The patient, a female student, aged 19, was admitted to the Hospital of SS. John and Elizabeth on May 3rd, 1922. The history was that at the age of 7 she had an attack of pain in the right iliac fossa, the condition being diagnosed as appendicitis; she recovered without operation. Apart from this she had always enjoyed excellent health until August, 1921, when one morning at about 7 o'clock, before getting up, she had a sudden severe attack of spasmodic pain localized in the right iliac fossa. She had slight nausea but did not vomit; the bowels had been quite regular. From this attack she recovered in a day or two. From January to April, 1922, however, similar attacks recurred, becoming more severe and of longer duration; the bowels were quite normal, the menses unaltered, and micturition unaffected.

On May 2nd the patient was obliged to go to bed on account of an exacerbation of the previous symptoms, which took place at 10 a.m.; this attack, however, was far more severe than any of the previous ones. When admitted, on May 3rd, the temperature was 98.4° F., the pulse 80, and respirations 20. The patient's general condition was good. The tongue was slightly furred. The abdomen moved well with respiration; it was not rigid, but there was some increased resistance deep in the right iliac fossa, as well as fairly marked tenderness. The pelvis was not examined.

On May 4th the temperature had risen to 100.8° at 6 a.m.; the pulse was 100, and the respirations 23; tenderness was very marked in the right iliac fossa. Under general anaesthesia a gridiron incision was made, and on opening the

abdomen the appendix was found to be very small; there was no evidence of recent inflammation. Further examination revealed a cystic tumour 2½ in. by 2 in. by 1 in. resting on the anterior surface of the uterus, which was retroverted. The "cyst" had become twisted on its pedicle three times; it was cyanotic, and on closer inspection was seen to be a hydrosalpinx which had undergone acute torsion; the fimbriae could just be made out, the abdominal ostium being closed by many adhesions. Salpingectomy was performed. The other pelvic organs were normal, and the abdomen was closed in layers.

The hydrosalpinx contained blood-stained fluid, and microscopical examination showed some fibrosis and extravasated blood into the tissues of an otherwise normal Fallopian tube. Except for some slight pleural effusion, possibly due to an infarct, the patient made a good recovery.

For permission to publish this case I am indebted to Mr. G. A. Ewart, surgeon to the hospital, under whose care the patient was admitted.

F. JOSELIN JAUCH, M.R.C.S.Eng., L.R.C.P.Lond.,
Late Resident Medical Officer, Hospital of SS. John and Elizabeth.

Reports of Societies.

COMPARATIVE ANATOMY OF THE ACCESSORY SEX GLANDS.

A MEETING of the Section of Urology of the Royal Society of Medicine was held at the house of the Royal Society of Medicine on June 29th, with the President, Sir THOMAS HORDER, in the chair. Sir THOMAS HORDER gave a summary of the findings of the special committee appointed to report on evidence submitted at previous meetings of the Section on the subject of renal function tests. This résumé, he announced, would be published in the *Proceedings* of the Society.

Mr. KENNETH WALKER then read a paper on the comparative anatomy of the accessory sexual glands. In opening his subject Mr. Kenneth Walker said that he had embarked on this expedition into comparative anatomy with a definite object in view—namely, that of seeing whether comparative anatomy would throw any light on the subject of the function of the accessory sexual glands. Our ignorance of the physiology of reproduction was profound. What was the true function of the prostate? All that we knew was that the prostate provided a secretion which supplied a food and a favourable environment to spermatozoa. Spermatozoa remained active in saline containing prostatic secretion for a period of from seven to ten times longer than when in normal saline alone. With regard to the seminal vesicles we were in still greater ignorance. All that we really knew was that the term "seminal vesicle," in so far as it signified a sac in which semen could be stored, was a misnomer. The vesicles certainly took a more active part in reproduction than had previously been supposed, and contributed a secretion which although not essential was nevertheless important to reproduction. The experiments of Walker of Baltimore and of Steinach had shown that excision of the prostate and the vesicles had no effect on the sexual vigour of an animal. A male rat that had been subjected to excision was observed to indulge in coitus eighty times within the course of an hour on being allowed to return to the females. The rat was, however, undoubtedly sterile.

The lecturer said that he did not intend to discuss the accessory sexual glands of the lower members of the animal kingdom, such as fish, insects, and reptiles. It was, however, interesting to note that the accessory glands were well represented amongst fish by the cloacal glands. After emission of the sperm the cloacal glands evacuated a thick viscous material which provided for the delicate sperm a protective envelope. Here was foreshadowed the function of the prostate, which, inasmuch as it was developed from the cloaca, might be regarded as the analogue of the cloacal glands.

A series of drawings of the accessory sexual glands of selected animals was then shown on the epidiascope. The lecturer pointed out that in the ornithorhynchus both the prostate and the seminal vesicles were absent. The epididymis, on the other hand, was very highly developed, and might possibly discharge some of the functions of the absent glands. Amongst the marsupials could be seen the beginnings of a prostate. The long uro-genital sinus was definitely thickened in the kangaroo, and microscopical examination of its wall showed the existence of two coats—an inner glandular and an outer muscular. In the specimen of the wombat which the lecturer had recently dissected this was particularly well marked. Drawings were then shown which demonstrated the enormous development of the prostate and more especially of the vesicles amongst rodents. The greatest development of all would seem to be found in the case of the viscacha, a guinea-pig-like rodent found on the Argentine pampas. Here the vesicles by their size overshadowed the whole of the genito-urinary system and were suspended on mesenteries of their own.

The point of interest in the rhinoceros was the great similarity in structure between the prostate and the vesicles, both being solid multilobulated glands with no obvious line of separation between the two. In the rhinoceros, and still more in the case of the Red River hog, Cowper's glands reached an enormous size. What was their function? Their secretion had been said to neutralize and sweep out any urine remaining in the urethra before coitus, but surely such high development implied the existence of some more important function than this. The chief point of interest amongst antelope and deer was the presence of a very highly developed uterus masculinus. In the aard-vark (a species of wild pig living in South Africa) this structure was so large that it would almost appear to have some functional value. The elephant and the zebra were both of interest on account of the presence of well-marked ampullae to the vasa deferentia. A section of this ampulla in the zebra laid bare a structure that very much resembled the section of a seminal vesicle. This latter structure in the case of the zebra was a simple thin-walled sac, so that it would appear that the highly developed ampulla, so rich in glands, was performing in this animal the function normally discharged by the vesicle. Oppel's observation was of some interest in this connexion. Oppel had noted a relationship between the presence of an ampulla and the time taken in coitus. Those animals provided with a well-marked ampulla of the vas, like the horse, the ram, and the bull, had a very short period of coitus, whereas animals like the dog, the cat, and the pig, who had no ampulla in which semen could be stored ready for ejaculation, occupied a long time in the sexual act.

In conclusion the lecturer drew certain conclusions from the specimens shown on the screen. The first point worthy of note was the very marked variations that occurred in the degree of development of the accessory sex glands in different members of the animal kingdom. Moreover, it would appear that there was considerable overlapping in function between the prostate and the vesicles. This was suggested not only by similarity of structure but also by the fact that, broadly speaking, where the prostate was highly developed the vesicles were often rudimentary, and vice versa. This observation, which the lecturer for a short time had flattered himself by imagining to be original, was actually an observation of John Hunter's. Thirdly, it would appear that Cowper's glands, which in man were of such trifling importance, in certain animals performed a very important but unknown function. Finally, a study of comparative anatomy fully justified the inclusion of the epididymis and the ampulla of the vas amongst the accessory sexual glands.

Sir THOMAS HORDER, after congratulating the lecturer on what he considered to be a very original paper, declared the matter open to discussion.

Mr. RAFE THOMSON said that he considered the common explanation given of the function of Cowper's glands absolutely inadequate. There was very little urine left in the urethra and it was absurd to suppose that Cowper's glands were there simply to neutralize this moisture. He did not entirely agree with Mr. Kenneth Walker's views of the function of the verumontanum, which he (the speaker) believed to act merely as a mechanical means of preventing semen from passing back into the bladder during coitus. Finally, had Mr. Kenneth Walker noticed any relation between the size of the accessory sex glands and the size of the litter in different animals?

Sir JOHN THOMSON WALKER, after congratulating Mr. Kenneth Walker, said that he was somewhat doubtful of the significance of George Walker of Baltimore's excision experiments. But, after all, these experiments were repeated whenever a prostatectomy was performed in the human subject. It was well known that prostatectomy had no effect on virility, but it probably sterilized the patient. He had seen no case in which a patient had produced children after submitting to prostatectomy, and would be interested

to hear if any other member of the Section could cite such a case.

Mr. FRANK KIDD remarked that the sexual act was a very complicated one, and that he had always considered the chief purpose of the secondary sexual secretions to be that of lubrication. It was probable that some of the secretions might have the effect of coagulating others.

Mr. SWIFT JOLY said that he had records of a man who had produced children after prostatectomy. Nobody, of course, could exclude the possibility that another person had sired his family, but against this view was the fact that the children greatly resembled their supposed parent.

Mr. KENNETH WALKER replied to the various points raised in the discussion.

THE EFFECT OF LIGHT ON RICKETS.

DR. ALFRED F. HESS of New York lectured before the Royal Society of Medicine on July 7th on the subject of rickets, particularly from the point of view of light as an agent in its prevention and cure.

Dr. Hess admitted that no absolute deductions could be made as to the effect of light upon the incidence of rickets until certain questions relating to diet and diet deficiency had been solved, but the fact that breast milk failed to protect against rickets showed that food was not the controlling factor in the situation. He believed that one-half the breast-fed infants of the city poor showed some signs of rickets in the spring of the year, even when the mothers were well nourished and on varied diet. Breast milk furnished only an uncertain factor of safety, and the additional factor of protection needed was light, the supply of which, in modern cities, was far less adequate and normal than the supply of milk. One of the significant things about rickets was that it had a seasonal incidence. It made its appearance in the winter, reached its maximum at the beginning of spring, and disappeared in the summer. The infants in the New York institution with which he was connected showed practically no rickets in July. It was not enough even to speak of seasonal incidence, for the incidence of rickets changed markedly month by month. There was a great deal more rickets in January than in December, and still more in February and in March. It was worthy of note in this connexion that the ultra-violet energy in sunlight was very low during the first three months of the year. It was more depressed proportionately to its summer level than the blue-violet light, the ordinary visible light (the yellow rays), and the heat radiation from the sun during the same period, and it was lower in the spring than in the corresponding months of the autumn. Yet again there was a seasonal tide in the blood-phosphate content of infants. This was lower in January than in December, and lower in the two ensuing months than in January, beginning to go up in April, reaching its normal level at midsummer, and ebbing again with the approach of winter.

The lecturer detailed some experiments with light in the treatment of rickets, including full sunlight, the light of the carbon arc, which had a band spectrum, and the ultra-violet rays of the mercury vapour quartz lamp, which had a line spectrum. He had also tried x rays, but he had found them unavailing either to cure rickets or to produce it in animals, although in massive doses they produced a marked atrophy in the marrow. He had made some experiments also to determine which part of the spectrum was most useful from the point of view of the cure or prevention of rickets, and the result was to show that a certain special glass filter which allowed ultra-violet rays of about 290 $\mu\mu$ wave-length to pass gave absolute protection from rickets, even when the doses given were quite small, whereas rays of longer wave-length, up to the border of the visible spectrum, were less effective and certain. There were three factors which influenced the result. The first was growth: if an animal was growing rapidly it developed rickets much more readily than if it was growing slowly, and if growth were stopped altogether rickets might heal spontaneously. The second was a reciprocal action between the amount of phosphorus in the diet and the amount of light available. The third was pigment, which might prevent the therapeutic or prophylactic action of the light altogether. He had subjected white rats and black rats of corresponding age, all of them on some predisposing diet, to the radiations from the mercury vapour lamp, and he found, after a good deal of experiment, that at a certain regulated dosage all the white rats were protected from rickets and all the black rats developed rickets. It was evident that in the case of the black rats the pigment of the skin and hair prevented the action of the actinic rays. The same thing happened in the case of negro infants, who, in a temperate climate, were very susceptible to rickets. In New York the milk for the negro babies was supplied from the same dairies as the milk for the white children, yet the negroes developed rickets out of all proportion to the others. The negro child evidently needed the additional sunlight which was available in the West Indies, where rickets never appeared. It was also found on treating children by means of light that if the extremities were covered by a white cotton material the radiations were still effective, at least to some extent, whereas a black cotton material from the same loom withheld their action. The effect of the light was systemic and not local. If a rachitic infant were treated by exposure to sunlight, and one wrist was covered with an opaque material while the other wrist was bare, a radiograph taken a month later would show that the process of healing had taken place in both wrists alike.

Sir WILLIAM BAYLISS, in proposing a vote of thanks to Dr. Hess, said that what interested him in the lecture was the evidence which it afforded that the effect of light was to produce a chemical substance; the effect could not be purely physical. It was also perfectly clear that there were several factors involved in the prevention and cure of rickets, but that none of them alone, without light, was entirely effective. That seemed to negative the theory that the effect of light was to produce a synthesis of vitamin A, for no amount of vitamin A, according to Dr. Hess, was effective in rickets prevention without light.

Dr. HESS, in a few words of acknowledgement, said that in the United States the work which British investigators had carried out on rickets, from that of Glisson in the seventeenth century to that of Mellanby and others at the present time, was fully appreciated. There were now two ways of curing or preventing rickets. One was by means of cod-liver oil, which was quite as specific for rickets as mercury for syphilis or quinine for malaria, and the other was plentiful light. With these two resources it should be possible to eradicate rickets from the child population of British and American cities.

Reviews.

OPHTHALMOLOGY IN GENERAL PRACTICE.

THOSE who are engaged in general practice, especially in the more remote parts of the country, will be grateful to Mr. MALCOLM HEPBURN for his little book on the *Ophthalmology of General Practice*.[1] The author, at the outset of his career, was engaged in a busy general practice and so is thoroughly conversant with the difficulties which eye diseases present to the general practitioner; he has succeeded admirably in his aim of showing the family doctor what cases he can safely treat and in what cases it may be advisable to seek more expert advice. In large cities a family doctor can safely say that he makes no attempt to treat serious cases of ophthalmic disease, but it is far otherwise in a mining village or country hamlet, and those whose lot is cast in such places must know something about this subject. This book is just what he needs; it is pleasantly written, composed in simple language, and the mathematical formulae, which form so conspicuous a part of many of the textbooks on ophthalmology, are conspicuous by their absence.

The first four chapters deal with the examination of the eye, urgent cases in general practice, drugs, and operations; the succeeding chapters describe the various external diseases, injuries, fundus conditions, squint and errors of refraction and eyestrain; an index completes the work. In the chapter on operations the good advice is given that the general practitioner should avoid all intraocular operations, but the principles underlying their performance in the more urgent cases, such as excision of prolapsed iris and cases of increased tension from acute primary or secondary glaucoma, are outlined, while the operations for excision of the eye and the operative treatment of chalazion are described; the two last named are operations which the general practitioner may be called upon to perform. The chapters on diseases describe briefly but adequately the conditions met with; the illustrations are

[1] *The Ophthalmology of General Practice.* By Malcolm Hepburn, M.D.Lond., F.R.C.S.Eng. London and New York: Cassell and Co., Ltd. 1922. (Demy 8vo, pp. xi + 184; 9 figures, 8 plates. 12s. 6d. net.)

excellent, while the remarks on treatment are sound and to the point; much excellent advice is given in the chapters on squint and errors of refraction. We are convinced that few practitioners can afford to be without this work.

MEDICAL PRACTICE IN THE TROPICS.

ON February 25th last (p. 315) we announced the publication of the first volume of the *Practice of Medicine in the Tropics*,[2] edited by Colonel W. BYAM and Major R. G. ARCHIBALD. We then quoted from the preface a statement to the effect that the book was intended to serve students in English-speaking countries as an introduction to tropical medicine, pointed out that the scope of the work was not strictly limited to tropical diseases, and added that the standard set in the first volume was high. The second volume, which is now before us, opens with chapters on differential diagnosis and on certain bacterial diseases—enteric fevers, undulant fever, plague, cerebro-spinal fever, cholera, bacillary dysentery, leprosy, and tubercle. Following this comes a section on spirochaetal diseases—infectious jaundice, yellow fever, relapsing fevers, syphilis, yaws, bronchial spirochaetosis, and rat-bite fever. The next section deals with protozoal diseases, including those due to amoebae, trypanosomes, the leishmania parasites, and the intestinal flagellates of man; it deals also with coccidosis, malaria, and balantidiasis. The volume closes with an appendix on syphilis, a list of authorities, and a general index. A very large field, it will thus be seen, is covered, and many of the diseases, such as malaria, dysentery, leishmaniasis, etc., are of the greatest importance from a tropical point of view.

We may specially note the chapters on differential diagnosis by Colonel Byam, one of the editors. The importance of the subject is very evident to anyone dealing largely with tropical disease. The inexperienced are apt to forget that ordinary cosmopolitan maladies, such as syphilis and tubercle, are quite as common, if not more common, in the tropics than at home; mistakes are very frequently made on this account. There is also an obsession amongst people at home that when an individual who has been abroad becomes ill he must be suffering from some tropical malady, and common conditions such as tubercle, ulcerative endocarditis, and so on, never seem to enter their heads. This, we are told, has been specially noticeable since the war, and unfortunate individuals have been dosed with quinine, in some instances for as long as two years, for supposed malaria when they were suffering from some ordinary home complaint. Just in the same way any passage of blood and mucus is at once diagnosed as dysentery, though the real cause may be, and often is, malignant disease of the bowel, tubercle, or syphilis. Colonel Byam's interesting chapters and carefully selected charts should do much to counteract this tendency and lead to more careful general examinations being made on all patients from abroad—a Wassermann reaction, for example, should never be omitted.

The enteric fevers are well dealt with by Colonels Harvey and Tull Walsh, as is also undulant fever by Sir P. W. Bassett-Smith. Victor Heiser writes on bubonic plague, and Wu Lien Teh (G. L. Tuck) on the pneumonic type. The dysenteries, probably the most important group of diseases in the tropics, are well described—bacillary dysentery by Dr. Manson-Bahr and Colonel Perry, in collaboration with the late Sir Patrick Manson, and amoebic by Mr. Clifford Dobell and Dr. G. C. Low. The coloured plates in the latter article are the best we have seen and are the work of Mr. E. Schwarz-Lemoir.

Trypanosomiasis is well dealt with also, Dr. Blacklock and Professor Yorke being responsible for the text. Major Archibald, one of the editors, takes leishmaniasis. Malaria, the most important tropical disease after dysentery, is treated by Colonels James and Christophers and Drs. J. D. Thomson, Woodcock, and Parsons. The space (ten chapters) devoted to this seems a little out of proportion to that given to some of the other subjects. Still there is a great deal to say, and a perusal of the chapters does not reveal much that is redundant. Dr. Parsons condenses the consideration of prophylaxis admirably into a short chapter. The plates of the malarial parasites, illustrating the chapters by J. D. Thomson and H. M. Woodcock, are as nearly perfect as anything can be. Blackwater fever, we note, is placed, and we believe rightly, under malaria and not given a special heading of its own.

When we come to consider the work as a whole and ask what are the points in favour and against it, it is pleasant to have to say that those in favour completely outweigh any faults that may be noted. The whole tone of the work is excellent, owing in large measure to the care with which the editors have selected the writers of the different chapters. Everywhere there is evidence of careful and accurate work in bringing together the details necessary for the adequate description of each disease. We have already mentioned the excellence of some of its illustrations; all are good and will greatly increase the usefulness of the work.

The second volume, then, is quite up to the standard of the first, and might even be described as better. Adverse criticism of the work as a whole is confined to the point that it is too big for a general textbook; as a work of reference it will hold its own anywhere, and, as was said when reviewing the first volume, it should become a standard work in all English-speaking countries. We look forward to the third and final volume, which is now, we believe, in the press.

NUTRITION AND NURTURE.

IN *Nutrition and Growth in Children*[3] Dr. EMERSON of Boston discusses the problem of the ill-nourished child of school age, the child who is under weight, and yet not obviously ill nor suffering from any latent disease. His book is the fruit of careful thought and wide experience, and is written in a moderate and convincing way. He is satisfied that poverty, insufficient and badly cooked food, hereditary weakness, tubercle, and syphilis will not supply the clue to malnutrition in young children; it is, he holds, a question of over-fatigue, irregular and hurried meals, excessive use of tea and coffee and sweets, lack of fresh air, and faulty home control. The causes are thus complex and social, and deep-rooted in the whole environment of the child; they can be grappled with and removed only, he contends, by a thorough review and reversal of that environment. The problem of treatment is attacked by the "nutrition class," which consists of not more than twenty children, with their mothers, a lady voluntary worker, and the physician. Each child has previously been carefully studied; its daily programme of work and play and rest mapped out; the approximate caloric value of its daily diet calculated and the hygienic condition of the home looked into; finally, on a large chart, the actual weight of the child in relation to the average weight for the height is marked, and followed at the weekly sessions of the class. These charts are hung on the wall and the children placed in order of merit according to the amount of the weekly gain. By this ingenious use of the influence of competition and publicity, the interest and zeal of both parents and children are secured, and the various causes of malnutrition in the children are impressed upon the minds of all the mothers present. The plan is thus not only an elaborate investigation of the individual case but also one of combined education in all that concerns the diet and hygiene of young children. Dr. Emerson has little or no place for drugs among his remedial measures; these generally include the addition of extra food in the form of milk and wholesome cereal, leisurely and regular meals, the exclusion of unsuitable foods, and insistence on rest periods during the day. But sound as these measures are, they are perhaps less important than the way they are inculcated and enforced. A wise régime is indicated in such a way that moral compulsion is brought to bear upon the parent of the child. The book gives a full and clear account of the whole system of investigation and instruction, and is illustrated with many photographs and weight charts of the children; it describes a most interesting social experiment, and one that reflects credit upon the patience, enthusiasm, and wisdom of its author.

In a little book, whose title may be translated "The Conservation of Infant Life,"[4] Dr. G. VARIOT has collected and reprinted a series of addresses given at the Institute of Puericulture, which was founded in 1911 by the city of Paris in connexion with one of its infant hospitals. The scheme had its origin in the brain of Dr. Variot, and was a development of his Goutte de Lait de Belleville, which began in 1892, and was the model for many similar institutions in various French towns. In these dispensaries two novel principles were introduced: the provision of sound and suitably modified

[2] *The Practice of Medicine in the Tropics.* By many authorities. Edited by W. Byam, O.B.E., and R. G. Archibald, D.S.O. Vol. ii. London: H. Frowde, and Hodder and Stoughton. 1922. (Roy. 8vo, pp. xxx + 858-1682; 246 figures, 31 plates. £4 4s.)

[3] *Nutrition and Growth in Children.* By William R. P. Emerson, A.B., M.D. New York and London: D. Appleton and Co. 1922. (Demy 8vo, pp. xxix + 342; frontispiece and 44 illustrations. 10s. 6d. net.)

[4] *Comment Sauvegarder les Bébés. Enseignement de l'Hygiène Infantile, donné à l'Institut de Puériculture et à la Goutte de Lait de Belleville.* Par le Dr. G. Variot. Paris: Octave Doin. 1922. (4½ × 7½; pp. 400. Fr.10.)

milk, and careful instruction in the hygiene and care of infants. The Institute of Puériculture was the extension of this idea of education, and consisted in regular courses of infant hygiene and dietetics given to ladies, voluntary workers, and nurses, and even to medical men. The lead thus given is now being rapidly and widely followed. Funds presented by the American Red Cross to the Faculty of Medicine of Paris have enabled it to found a school of puériculture in connexion with its professorship of infant hygiene and medicine; and through all the departments of France institutes of puériculture have been created by legislative enactment. The French Red Cross also has now included in its programme courses of instruction in infant hygiene. Dr. Variot thus sees the prospects of a great expansion of this field of preventive medicine in which he was one of the earliest and most successful pioneers, though by the limit of age he is about to sever his official connexion with it. These popular addresses, most of them given during and subsequent to the war, at a time when the urgency of saving infant life was apparent to all, appear very timeously in their present form. They are bound to exercise an important influence upon the policy and programme of these multiplying centres throughout France, where both the mothers themselves and voluntary workers will receive instruction in all that pertains to the health and healthy nurture of young infants.

FOOD VALUES.

THE first edition of *Food Values*[5] by Miss M. MCKILLOP was published in 1916, and a second edition has now appeared. The book was originally written during the war with the purpose of providing those responsible for catering with information on the principles of dietetics, and with the facts about food composition necessary for the application of the principles. The writer's object was to provide the necessary facts in a cheap and easily readable volume, free, as far as possible, from technical terms. The first four chapters contain a general account of the principles of nutrition; in the fifth chapter are thirty-five tables showing the composition and calorie value of all the commoner foodstuffs; the final two chapters explain how these tables are to be used in actual catering, and very clear examples are given showing how to calculate the calorie value of a cooked food from the raw materials it contains.

The whole book is written in simple language intelligible to those with no special knowledge of physiology or of dietetics. This makes it admirably suited for providing those engaged in catering for families or for larger units with a working knowledge of the principles of dietetics.

Medical men interested in dietetics will find the tables in the book extremely useful, for they give in a very convenient form information which usually has to be extracted from large and expensive volumes. The only point that we feel is open to criticism is the manner in which the book has been revised for the second edition now before us; the text as a whole has not been rewritten, but notes on the various chapters are given in an appendix. The work done on vitamins since 1916 is thus dealt with in a ten-page note, and the new knowledge acquired during the war concerning the minimal diet on which it is possible to maintain health has been dealt with in a similar manner. The new knowledge in both of these two fields is of such fundamental importance for the whole subject of dietetics that it can scarcely be handled adequately in an appendix.

PRACTICAL PSYCHO-ANALYSIS.

DR. H. SOMERVILLE has written a small volume, *Practical Psycho-Analysis*,[6] which is designed to give the reader sufficient knowledge of its subject to enable him to commence an analysis. The author follows the teaching of Freud, but somewhat unnecessarily diverges from it in his usage of conventional terms. It is thus misleading to describe the "preconscious" as the seat of repressed experiences which can only be brought into consciousness indirectly, and to state that the mental processes included therein are concerned with the primary instincts and are largely of the nature of sexual wishes. Dr. Somerville suggests that it does not matter what terms are used so long as the reader knows in what sense the writer uses them; but it is surely better, when giving an elementary exposition of a particular school of thought, to define its technical terms as they are generally understood, as otherwise much confusion will arise. The volume is not intended to provide an account of the theoretical basis of psycho-analysis, but the author finds it necessary to explain its basic principles in order that the mechanism of the production of the neuroses may be made clear. It is very difficult, if not impossible, to present the theoretical aspect of psycho-analysis in a few short chapters, and though the author writes clearly in places, some of his explanations are confusing and may fail to convey any meaning. This is particularly the case in his treatment of *libido*, *affect*, and *desire*, much of which leaves the reader puzzled and far from clear in his mind as to the distinctive meanings of these terms.

On the whole the book contains more theory than would seem desirable in a small volume with definitely practical aims. It is true that all the chapters are freely illustrated by reference to actual dreams, but the practical information given as to the technique of psycho-analysis is scanty. Especially do we miss any reference to indications for psycho-analytic treatment. The author does not suggest what kind of cases are likely to benefit and what cases should be treated in other ways, and it is naturally in these respects that the practitioner will look for guidance.

THE LAKE OF GENEVA.

SIR FREDERICK TREVES would have his readers believe that he is a true lover of "the real country." In his new book *The Lake of Geneva*[7] he has a whole chapter to prove it, and writes of an idyllic country near Evian, of all gay places, that it is "little removed from that imagined land where shepherds played upon their pipes, where fauns and dryads gambolled in the glen;" but in truth we believe him to be more enamoured of the storied haunts of the past where he may sit him down "and tell sad stories of the death of kings," or in this instance counts, for that was the title borne by the rulers of Savoy, with which on the southern bank he is much concerned. It is a very picturesque strip of country, but looks to the north, and invalids and those who seek a mild winter climate rightly congregate on the northern shores, especially at Montreux, Vevey, and the towns near by, and at Lausanne. The discovery of this riviera is no new thing; its advantages were found out over a century ago. Byron, who with Shelley was nearly drowned in the lake, has an apostrophe to this beautiful sheet of water, in which, after mentioning other famous residents of the banks, he enumerates "Voltaire, Rousseau, our Gibbon, and de Staël." It was indeed soon after leaving the northern bank that Gibbon sighed as a lover but obeyed as a son, and jilted Mademoiselle Curchod, who afterwards became the wife of Necker and the mother of Madame de Staël. Among the copious and excellent illustrations Sir Frederick Treves has himself provided are photographs of the house at Crassier, where Mademoiselle Curchod's father was pastor, and of the chateau at Coppet, where Necker and his wife resided. Sir Frederick Treves shows himself a most agreeable guide to a beautiful countryside and we strongly recommend his book to our readers.

NOTES ON BOOKS.

SWITZERLAND used to be called by some of its most ardent English admirers the playground of Europe, and though the appellation was resented by some Swiss, the life-giving air of its mountain resorts will probably continue to be its chief claim on the affections of weary men and women in search of rest and health. But it also contains a number of mineral water stations, and to make these better known the Swiss Federal Railways (11b, Regent Street, London, S.W.1) have issued a pamphlet entitled *Swiss Watering Places*. It contains illustrated articles on nine watering places—Baden, Gurnigel, and Ragaz-Pfaeffers, all weakly mineralized waters; Passugg, Tarasp-Schuls-Vulpera, and Val Sinestra, weakly mineralized but containing some sodium bicarbonate; and St. Moritz, also a weakly mineralized water, but differing from the others in containing iron bicarbonate. The waters of the other two springs—Bex, in the Rhone Valley, and Rheinfelden, in the upper Rhine Valley—are saturated solutions of common salt, thus resembling the waters of Droitwich in this country. In the account of each watering place details are given with regard to the situation and climate of the place, its geology, the salts dissolved in the waters, their therapeutic action, and the indications and contraindications they afford.

[5] *Food Values. What they are and how to calculate them.* Margaret McKillop, M.B.E., M.A. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. Second edition. 1922. (Crown 8vo, pp. viii + 171. 3s. 6d. net.)

[6] *Practical Psycho-Analysis.* By H. Somerville, B.Sc., F.C.S., L.R.C.P., M.R.C.S. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. x + 142. 6s. net.)

[7] *The Lake of Geneva.* By Sir F. Treves, Bt., G.C.V.O., C.B., LL.D. London and New York: Cassell and Co., Ltd. 1922. (Roy. 8vo, pp. xii + 347; illustrated. 25s. net.)

BRITISH CONGRESS OF OBSTETRICS AND GYNAECOLOGY.

MEETING IN LIVERPOOL.

THE third British Congress of Obstetrics and Gynaecology was held at the Medical Institution, Liverpool, on June 30th and July 1st, 1922, under the presidency of Mr. HAROLD CLIFFORD (Manchester). The forenoon of June 30th was devoted to a discussion on the treatment of eclampsia and commenced with the reading of detailed reports regarding prognosis and treatment prepared by subcommittees representing the Royal Society of Medicine (Section of Obstetrics and Gynaecology), Edinburgh Obstetrical Society, Midland Obstetrical and Gynaecological Society, Royal Academy of Medicine in Ireland (Obstetric Section), North of England Obstetrical and Gynaecological Society, and the Birmingham Maternity Hospital respectively. In the afternoon visits were paid to the Royal Infirmary, the Hospital for Women, and the Stanley Hospital, to see operations by Professor Blair Bell, Dr. Gemmell, Dr. H. Leigh Murray, and Miss Frances Ivens. The annual dinner was held in the evening, with Mr. HAROLD CLIFFORD (President of the North of England Obstetrical and Gynaecological Society) in the chair, and Dr. J. G. Adami, Vice-Chancellor of the University of Liverpool, and Dr. J. Hill Abram President of the Liverpool Medical Institution, as chief guests. On July 1st Dr. BETHEL SOLOMONS presided at a pathological session, when a number of interesting specimens were exhibited and described.

DISCUSSION ON ECLAMPSIA.

After opening remarks by Mr. HAROLD CLIFFORD, President of the Congress, the chair was taken by Professor HENRY BRIGGS, President of the Section of Obstetrics and Gynaecology, Royal Society of Medicine.

LONDON COMMITTEE'S REPORT.

Dr. T. W. EDEN, in introducing the London report on the treatment of eclampsia, said:

This report deals with the whole of the cases of eclampsia admitted during the period of ten years 1911–21 at fifteen London hospitals. We have included in our analysis only those cases in which convulsions occurred, and we have endeavoured as far as possible to exclude cases of chronic renal disease complicated by uraemic fits in pregnant and parturient women.

During the selected period 547 cases of eclampsia were admitted to these hospitals, and of these 427 recovered and 120 died, the maternal mortality being therefore 22.1 per cent. The combined reports of the North of England, the Midland, the Edinburgh, and the London figures cover 1,640 cases, with a mortality of 23.66 per cent. It appeared to be a necessary preliminary to any exact study of the effects of treatment to devise a plan by which cases could be grouped as mild or severe, according to their gravity.

It being agreed that eclampsia is a disease which varies greatly in severity in different cases, if we are to compare the effects of different forms of treatment some such grouping is necessary, for if a particular treatment has been adopted in mild cases only, and another treatment in severe cases only, it is obvious that the results obtained in the two groups are in no way comparable. With this object in view we have examined the effects upon prognosis of the following phenomena: coma, the pulse rate, the temperature, the number of fits, the amount of albumin in the urine, the degree of oedema, and the blood pressure. The results of this examination are recorded in detail in our report.

From our study of these isolated symptoms we conclude that the following seven phenomena are to be regarded as signs of danger: coma, a pulse rate over 120, a temperature above 103° F., a number of fits greater than ten, a urine which becomes solid on boiling, the absence of oedema, a blood pressure above 200 mm. When a patient exhibited any two of the above phenomena the case has been grouped in our report as a severe one; when these phenomena were absent as a mild one.

Adopting this classification, and excluding 14 moribund cases, we have a total of 425 cases with a mean mortality of 16.2 per cent. If the cases are divided into mild and severe the figures are as follows: mild 264—mortality 6.4 per cent.; severe 161—mortality 32.4 per cent. The ratio of the mortality rate in mild and severe cases is therefore exactly 1 to 5. We regard this striking difference in the mortality rate in the two groups as a clear demonstration of the soundness of our basis of classification.

We next proceeded to examine the results of obstetric treatment. The cases fall into the following five groups:

1. *Natural delivery*—that is, spontaneous delivery without interference of any kind. Total 89; mean mortality 12.3 per cent. Mild 50—mortality 6 per cent.; severe 39—mortality 20.5 per cent.
2. *Induction of labour*, delivery thereafter being spontaneous. Total 83; mean mortality 9.6 per cent. Mild 59—mortality 5 1 per cent.; severe 24—mortality 20.8 per cent.
3. *Assisted delivery*. These are mostly cases of low forceps, with a small number in which version was performed. Total 151, of which 22 died; mean mortality 14.5 per cent. Mild 100—mortality 5 per cent.; severe 51—mortality 33.3 per cent.
4. *Caesarean section*. Of the total, 6 were vaginal operations; 5 recovered and one died. Total 88, of which 21 died; mean mortality, 23.8 per cent. Mild 51—mortality 9 8 per cent.; severe 37—mortality 43.2 per cent.
5. *Accouchement forcé*. (Nearly all cases of forcible manual dilatation of the cervix.) Total 14, of which 7 died; mean mortality 50 per cent. Mild 4—mortality 25 per cent.; severe 10—mortality 60 per cent.

In order to dissociate as far as possible the influence of the disease from the method of delivery, as factors in mortality, the results in the mild and severe cases may be compared.

The mean mortality in mild cases is 6.4 per cent., and in severe cases 32.4 per cent., a ratio of exactly 1 to 5. If the mild cases delivered by the three simpler methods (numbers 1 to 3) are put together and compared with the severe cases delivered by the same methods the mortality rates are 5.2 per cent. and 26.3 per cent. respectively—that is, the ratio of 1 to 5 is almost exactly maintained. If we compare in the same manner the cases delivered by Caesarean section we find that the mild cases showed a mortality of 9.8 per cent., the severe cases a mortality of 43.2 per cent., which also corresponds closely to the mean ratio of 1 to 5. The cases delivered by accouchement forcé are excluded, because the results are such as to condemn the use of this method under any circumstances. Hence it appears that cases which can be classified as severe may be expected to show a mortality rate five times greater than those classified as mild, no matter what method of delivery is adopted. It is also clear that the cases in which there was no obstetric interference, or in which simple methods only were adopted, show a much lower mortality than those delivered by Caesarean section.

Three conclusions may perhaps be drawn from this analysis of the results of obstetric treatment:

(*a*) That natural delivery or delivery by simple methods is attended by the smallest risk to the mother.

(*b*) That delivery by rapid and forcible dilatation of the cervix is bad treatment.

(*c*) From the evidence before us we concluded that Caesarean section impairs the patient's chances of recovery, whether the case be mild or severe.

One or two general observations are called for in regard to the medical treatment carried out in this series of cases.

It is clear that medical treatment has seldom been carried out upon any definite plan, and has also been, generally speaking, excessive. The patient has been subjected to a multiplicity of drugs, and to a succession of procedures such as venesection, saline transfusion, hot packs, and gastric and colonic lavage, which might be expected to reduce a parturient woman in good health almost to the point of death, and must have done serious harm to one suffering from a grave toxaemia.

An attempt has been made to glean from the records some information as to the value of medical treatment as a whole, and also as to the value of individual methods of treatment. For this purpose the various methods of medical treatment were grouped as follows: (*a*) Elimination (including purgatives, except croton oil, enemata, gastric and rectal lavage, rectal saline, etc.); (*b*) venesection; (*c*) intravenous saline; (*d*) morphine and other sedatives; (*e*) croton oil; (*f*) hot packs; (*g*) veratrone. In addition, starvation or strict limitation of food was frequently combined with other methods, but no details of food given are available.

We began by looking into the 120 cases in our series which died, and we found that in the large majority the treatment adopted ranged over three or more of the above groups. In only seven instances was simple treatment falling under one heading only adopted. It is impossible to avoid the conclusion that the majority of the fatal cases were overtreated, and that in a considerable number the excessive treatment must have been a contributory factor in bringing about the fatal results.

After some remarks on the causes of death in the fatal cases, Dr. Eden concluded by saying:

We regard the results set out in our report as being profoundly unsatisfactory and having, as we believe, cleared the ground by showing how much our methods have been at fault, we hope now to set out on the much more difficult task

of formulating better methods in their stead. From the data collected in our report we are not in a position to do so, but we intend, with the co-operation of our colleagues at the various hospitals in London, to test in a simple and comprehensive manner the application of one or more simple schemes of management over a series of consecutive cases. We hope to get a system of note-taking adopted which will facilitate our classification into mild and severe cases, because to this point we attach great importance, for in the case of a disease so variable as eclampsia comparisons are valueless unless we are sure that we are not attempting to compare entirely dissimilar things. It will, of course, take time, but if our colleagues in the North and Midlands would join us the necessary material would be quickly accumulated, and results of value might be reached without any considerable delay.

Northern and Midland Reports.

The reports of the subcommittees representing the Edinburgh Obstetrical Society, North of England Obstetrical and Gynaecological Society, and the Midland Obstetrical and Gynaecological Society were prepared on similar lines to those of the London report and on the whole pointed to the same conclusions.

The report from the Edinburgh Obstetrical Society, presented by Dr. H. S. Davidson, dealt with 148 cases, of which 37 died—a mortality of 25 per cent.

Professor Ewen Maclean read the report from the Midland Obstetrical and Gynaecological Society, based on 140 cases, the maternal mortality being 28.5 per cent. Analysis of treatment was impracticable owing to the widely scattered centres from which the cases were collected; but his committee was strongly of the opinion that medical treatment in the form of elimination, simple water diet, and natural delivery, assisted if necessary by low forceps extraction, gave a much lower mortality than induced labour or any of the forms of accouchement forcé or Caesarean action.

Dr. H. Leith Murray presented the report of the North of England Obstetrical and Gynaecological Society, comprising 804 cases from Leeds, Liverpool, Manchester, and Sheffield. The maternal mortality was 24.43 per cent. As regards the results of treatment the committee did not feel justified in making any statistical synopsis. They considered that the accumulated figures were capable of great misinterpretation and agreed that only those actually in charge in numbers of cases, and particularly those who had carried out a uniform line of treatment for the majority of cases under their care, were in a position to make useful recommendations. The figures showed, however, that medical measures, combined in some cases with mild obstetrical procedures, were being more generally adopted.

The Dublin Method.

Dr. Bethel Solomons read a paper on the results of the treatment of eclampsia by the Dublin method. The three maternity hospitals and various members of the profession in Dublin were circularized, and it was decided that the greatest value would be obtained by taking the intern statistics of the Rotunda Hospital as a working basis, as the treatment there is so fully supervised, and such reliance can be placed on its being carried out rigidly in every detail. The series comprised 204 cases from 1903 until 1921, and the method employed, with some slight exceptions, was uniform all through. He was especially enthusiastic about the treatment, for in the last two years of the mastership of Dr. Tweedy, which coincided with the first two years of his period as assistant master, there were 29 cases, many of a very serious nature, with no deaths. He specially dealt with the diagnosis of the disease, which rested on data as laid down by Dr. Tweedy (Tweedy and Wrench, *Practical Obstetrics*, p. 525).

The treatment must be meticulously carried out. The busy specialist summoned to the country may obtain results, life or death, having performed Caesarean section or induction of labour, and may then hurry back to his work; but surely he is not justified in this when the results obtained by the Tweedy treatment have been unsurpassed. The main points of the treatment are: (1) Starvation from everything except water. The food ingested and the toxic elements from the foetus require the same ferments in the blood to neutralize them; the foetal toxin takes some of the elements from the blood intended for the digestion of food, which leaves the latter with no ferment, and therefore the food acts as a toxin. The starvation should be continued for three days, after which, if there is no improvement, then, and not till then, should Caesarean section or induction be recommended. (2) Stomach lavage. (3) Bowel lavage. These are most important. The speaker emphasized the exact method of carrying out these manœuvres. (4) Morphine. The value of this drug is at present *sub judice*. (5) Injection of sodium bicarbonate solution under the breasts should be done in all but the mildest cases. (6) Close observation of the patient. This should be done if possible by a qualified doctor, or, failing him, by a senior student or nurse thoroughly trained in eclampsia. This care will avoid many deaths from drowning by mucus. Nothing must be given by mouth to the unconscious patient.

Dr. Solomons demonstrated that the less the number of fits the greater the chance of recovery, therefore fits must be controlled. The treatment suggested will control fits and allow time for the natural efforts of the body to split the toxins into some simpler product and thus render it innocuous.

With regard to mortality, in Dr. Tweedy's mastership the intern mortality rate was 8.82 per cent. in 68 cases, while if the extern results were included the rate fell to 8.0 per cent., and there were no deaths in the last 29 cases, showing the better results following improved technique. Dr. Jellett's percentage was 12.85 in 75 cases. Sir William Smyly and Dr. Tweedy jointly (during the war) had 33 cases with 9.09 per cent. mortality and Dr. Fitzgibbon has 33 cases with the same rate. The Coombe Hospital, which followed to some extent the Rotunda treatment, had 9 cases in four years with two deaths.

In conclusion, Dr. Solomons said there was no doubt that the death rate from eclampsia could be kept at a lower level by following closely the treatment suggested by Dr. Tweedy, especially by watching the patient as a cat would a mouse for any signs of interference with respiration by mucus. It was also beyond doubt that the practitioner must meet with some cases so saturated with this pseudo-acidosis that recovery was impossible, but the number of these would be greatly diminished were routine general examination insisted on, especially examination of the urine. The general practitioner required further education on this point.

General Discussion.

Dr. Herbert Spencer (London) said he thought the reporters were to be congratulated upon the enormous number of facts which they had set before the Congress. They had now very valuable material to consider in what had been reported upon this most important subject, which was one of the bugbears of the profession at the present time. A report that struck him very much was that from Dublin. He had only glanced at it, but the results were extremely interesting. He had always thought that Dr. Tweedy's method of treatment was one that should be adopted, and had himself used it for some years past with some modifications. Dr. Tweedy's method of treatment was on the right lines, but he would like to ask Dr. Solomons how many of the cases were said to be eclampsia although they did not have fits, simply because they were in a state of coma.

Dr. Lamond Lackie said he did not believe in using chloroform in eclampsia. In any toxic condition chloroform was a mistake. If an anaesthetic was needed he was quite certain that ether should be given. An anaesthetic was seldom required except in a few cases where fits came one after the other. The determining factor in producing the fits was of course high blood pressure and for the treatment of this he pinned his faith to veratrone. He was of opinion that 1 c.cm. was a dangerous dose and that not more than 1/2 c.cm. should be given. It was an extraordinary thing that in general medicine veratrone did not seem to have the same effect as in eclampsia. He had asked several physicians in Edinburgh to tell him their experience of veratrone in albuminuria, and with one accord they told him they got no result at all; in fact it almost seemed as if this drug, which was a strong nervous and cardiac depressant, had also a specific effect in the treatment of eclampsia. He did not like morphine, but it had its uses. He had found pilocarpine very useful in spite of its dangerous reputation, especially in cases where there was slight oedema or no oedema at all. Even in some cases where the oedema was marked he had found it act like a charm. He agreed that active obstetric treatment should only be employed when it was absolutely necessary to aid the forces of nature, and in the great majority of cases when the patient went into labour very little help was required.

Dr. J. W. Ballantyne (Edinburgh) said it was a very big and significant fact that although eclampsia was persistently resistant to curative treatment it was amazingly yielding to

preventive treatment. If sufficient time was available prevention was almost invariably successful. That was a very significant phenomenon. "Incurable but preventable" was a short description of the present position of eclampsia. Albuminuria was still the great distant danger signal; high blood pressure and epigastric pain were the near danger signals. Prevention was of the greatest value when called forth by the distant danger signal of albuminuria; it was of less value but still useful when called forth by the near signals of danger. In 1921, in connexion with the Edinburgh Royal Maternity Hospital, there were not more than 28 cases of eclampsia out of 2,700 women admitted. Rather more than 900, or about a third, of these women attended the ante-natal clinic or had treatment in the ante-natal beds, and of these 254 had albuminuria.

Only one of these patients developed eclampsia, and she had received no preventive treatment. She was the one patient who ignored the distant danger signal. He recollected the case well. He almost implored her to stay in, for her labour was due in a few days and matters were serious, but she obstinately determined to go home, and the best they were able to do was to counsel her to take nothing but milk and water and return the next day. She went home, had a full meal, and did not return to the ante-natal department the next day, but entered the general part of the hospital the following afternoon. She did not say that she had been at the ante-natal department, nor did she show the ticket she had received there. She was delivered by forceps, and during the night had two or three fits. Both she and her child did well, so that in a sense no damage was done. Still, she had eclampsia, and was the striking exception which in his opinion abundantly proved the rule that preventive measures prevented eclampsia.

He could speak also for the venereal diseases department. Notwithstanding the association of eclampsia with venereal disease, no case of eclampsia occurred in that department in 1921, although there were a number of albuminurics. This year there had been two cases, and neither had received ante-natal treatment of any sort, either for venereal disease or albuminuria. One had a serious attack, the other a moderate one, and both recovered. Still, they were both capable of being prevented if they had been seen to.

Professor THOMAS WILSON (Birmingham) said that as far as he had been able to discover there was nothing new in the statistics which, after so much labour, had been brought before them that morning. The first remark he had to make had to do with the premonitory symptoms of eclampsia. Occasionally—very occasionally—there were no premonitory symptoms, but their experience in Birmingham at any rate was that in the immense majority of cases there were premonitory symptoms. The next point he wanted to make in view of the statistics that had been brought forward was this: a diagnosis of eclampsia without albuminuria was to be received with great distrust; he was very sceptical of regarding any such case as one of eclampsia in the absence of a *post-mortem* examination. It had been said that oedema was one of the important premonitory symptoms of eclampsia. In his experience high oedema was not very commonly found before eclampsia; usually the oedema was quite small in amount, often hardly determinable. There was another premonitory symptom of some importance which could be found if looked for: that was the increased diastase in the urine. When a patient began to pass a high quantity of diastase eclampsia was imminent. He looked upon severe epigastric pain and amblyopia, not as premonitory symptoms, but as symptoms of developed eclampsia—the disease was already present, and if a *post-mortem* examination was done at this time the liver, kidneys, and so forth would show the typical changes. The eliminative treatment was the one generally adopted in Birmingham, but he thought the hope in the future lay not in the treatment of eclampsia after it had fully developed, but, as Dr. Ballantyne had pointed out, in treating the albuminuria symptoms as soon as they arose. They ought to impress upon their students and fellow practitioners the immense importance of at once fastening on any suggestive symptoms and starting the treatment without any delay. Cases of albuminuria should be put to bed and treated seriously from the start. Only in that way would they be able to get an improvement in their results.

Dr. J. S. FAIRBAIRN (London) dealt with the degree of albuminuria in relation to prognosis. It would have been noticed that in most of the statistics a high degree of albuminuria corresponded to the severe cases. That was almost invariably the case. Every now and then, however, one got a case with a very slight degree of albuminuria and a high degree of kidney inefficiency, or on the other hand one with a considerable degree of albuminuria and comparatively efficient kidneys. Therefore he thought, in the management of their cases and in teaching their students, they ought to do what Professor Wilson laid stress upon: that was to make it plain that all cases of albuminuria, however slight, ought to come under observation and have careful investigation. He was sure that a large number of cases of eclampsia could be prevented, but was not sanguine that they were going to succeed by any means in preventing it more until they knew more about it. There were cases which came on with great suddenness and little warning. Apart from that, one had seen cases under observation in the ward where a question arose as to what ought to be done. They had been under treatment some little time, and then suddenly and unexpectedly they developed eclampsia. The rise of blood pressure was always a warning, but they had not yet got definitely to the stage when one could say, "This patient is safe from it." That was one of the difficulties, and until they got to that stage he did not think they would succeed in preventing the cases as Dr. Ballantyne would like.

Mr. FURNEAUX JORDAN (Birmingham) said reference had been made to warning symptoms. Out of 166 of their cases at the Birmingham Maternity Hospital 114 had warning symptoms, and only 5 out of the 114 had sent for a medical man until the last minute, just before they were admitted to hospital. The trouble lay not so much with the doctors as with the women. He thought every doctor and every midwife should be told that when a woman engaged them to attend her in her confinement she must be warned of the possibility of these symptoms, especially if she was an unmarried woman. He had a firm conviction that a great number of cases of eclampsia would be prevented if they could be taken in time. Sometimes after a woman had had eclampsia her husband came and asked if it would be safe for her to have another baby. He did not know whether he was right or not, but he always replied, "Certainly. If she has a diet of milk, butter, and cheese, and eschews meat, you need have no fear." He had not seen eclampsia occur twice in the same patient, but he knew of two ladies who had very bad eclampsia in their first confinements and who had since had respectively five and three children without any trouble.

Mr. FREDERICK EDGE (Birmingham) referred to the after-results of eclampsia, and thought that note should be taken of this aspect of the question in future reports. He knew a doctor's wife who had epilepsy following, as far as he could tell, a very marked eclamptic attack. He would also like to know the results on the eye, because he thought that in studying the eye they would learn a good deal about the damage done to the brain and other nervous tissues. It was quite certain that many of these people who got well suffered permanent damage. That would also influence them in advising a patient whether she was fit to have another child.

Miss FRANCES IVENS (Liverpool) referred to one point in connexion with treatment—Caesarean section. She was quite in agreement with those who considered that in advanced, almost moribund, cases Caesarean section was useless. But she was of opinion that in the extremely serious pre-eclamptic condition or in the early stages of eclampsia it was the most satisfactory method of treatment. Done under good conditions, the mother's interests were identical with the child's and there was a reasonable hope of saving both. Miss Ivens's experience of this method of treatment under such conditions was, she said, limited to three cases, and these she proceeded to describe in detail. She agreed that the after-history of cases of eclampsia should be gone into very carefully, and also thought that more pathological work should be done.

Mr. CLIFFORD WHITE (London) said that several speakers had laid stress on the importance of some special premonitory symptoms of eclampsia, and he wished again to emphasize the usefulness of the bicarbonate tolerance to which he had drawn attention in a short notice in the *Lancet* in 1920. It seemed to give the earliest indication of the presence of acidosis, and was very easy to carry out. He had recently had striking proof of its value in a case of a patient who was thought to have toxaemia, but who had a very low bicarbonate tolerance. After some days she developed other signs that proved the presence of encephalitis lethargica; but for the low bicarbonate tolerance, it had seemed during the first ten days to be a typical case of pregnancy toxaemia.

Dr. A. W. BOURNE (London) said the collection of this enormous amount of statistical material had been very valuable in consolidating their ideas of certain clinical and etiological facts, but obviously had not helped them further towards discovering the causation of the disease. They were

just as far from that to-day as they were twenty or more years ago. He supported the suggestion that there should be some unity of treatment, and could not help feeling that the excellent results from Dublin were not due so much to the precise method of treatment indulged in, which after all was largely based on an unproved theory, as to the fact that there was uniform treatment throughout. Until they got some unity of treatment not only could they not compare results but also he did not think they would make much further progress. The committee system which had been adopted for research on this matter had been of very great value, and was, he thought, immensely more valuable than research work carried on by one individual.

[The discussion was interrupted at this point to allow of the reading of three papers on eclampsia or allied conditions by Dr. Gibbon FitzGibbon, Dr. T. G. Stevens, and Dr. A. W. Bourne respectively.]

Eclampsia and other Toxaemias.

Dr. GIBBON FITZGIBBON (Master of the Rotunda Hospital) read a paper on the relationship of eclampsia to the other toxaemias of pregnancy. The paper dealt with observation during two and a half years in the Rotunda Hospital from the clinical aspect, and was based on a study of 40 toxaemic albuminuric cases, 16 eclamptic cases, and 4 toxaemic *ante-partum* haemorrhage cases.

The cases were all considered from the point of view that they were all toxaemias of pregnancy, and only became classified under a special heading because of the development of a dominant symptom.

The speaker had prepared tables showing the degree of the principal symptoms, the age of the patients, the period of pregnancy, and the condition of the foetus, the cases being divided in each table into primiparae and multiparae.

1. Primiparae are more liable to toxaemia than multiparae, but the age of the primipara has no influence on its development.
2. When a primipara becomes toxaemic, the tendency to develop eclampsia is in proportion to her youth. It is greatest under 20 years of age, and does not seem to increase in elderly primiparae.
3. The development of eclampsia in toxaemic women does not appear to be influenced by the pregnancy being primiparous or multiparous. If anything the multipara is more likely to develop eclampsia.
4. The period of pregnancy at which serious toxaemic symptoms or eclampsia develop is undoubtedly greatly affected by multiparity. It is relatively early in multiparae and late in primiparae. The longer the pregnancy continues the greater is the tendency to eclampsia.

Two eclamptic and six albuminuric cases had definite *ante-partum* haemorrhage besides the four cases classed under that head. These cases showed a marked preponderance of multiparae and an occurrence at an earlier period of pregnancy than eclampsia. No cases were classed as hyperemesis, but vomiting was severe in two and marked in nine cases.

The speaker referred to a column in one of the tables showing the maximum secretion of urine and the day on which it occurred, counted from the first day of treatment, and said that this was practically the point on which the recovery of the renal efficiency was judged. The maximum was not reached until after delivery, and did not altogether depend on the amount of the water drunk.

The treatment adopted in the Rotunda Hospital consisted of elimination and was based upon the belief that the toxin was the result of metabolic processes which were not abnormal to the pregnancy, but which accumulated owing to faults in management or deficient reserve power of the excretory organs and then produced toxic effects. There was practically no difference in the treatment of any of the toxaemic states beyond that called for by the immediate urgency of a symptom or the conscicusness of the patient, and any alteration was subsidiary to the main treatment.

The patient was kept in bed; free purgation was adopted and assisted by enemata. She was induced to drink as much water as possible—at least six pints in twenty-four hours, but preferably more. If the secretion of urine rose to normal and the albumin became moderate, milk was tried, and by the subsequent course of the case it was decided whether the pregnancy could be carried on or not. If there was vomiting enemata were persisted with, and in twenty-four to forty-eight hours purgatives by the mouth were retained. When the vomiting ceased the treatment was the same as for toxaemia. In eclampsia the variation in treatment was owing to the coma. The patient was kept on her side and nothing given by the mouth except by tube. The stomach was washed out and a purgative introduced with 12 oz. of sodium bicarbonate solution. The colon was washed out. This latter was not a prolonged rectal enema; the tube was actually passed into the colon by the aid of a finger in the rectum. This part of the operation was difficult and took twenty to thirty minutes to effect. The colon washing took altogether from one to one and a half hours and eight to twelve gallons of fluid. Colon lavage might be required one to three times at five-hour intervals, depending upon the degree of coma and the result of the purgatives. Other treatments were dependent on symptoms and persistence of coma. Morphine was given in the majority of cases, but was now excluded from the treatment as likely to cause respiratory complications and delay excretion, while it did not control the fits.

It was hoped that the treatment he had indicated would be universally adopted, as it and Stroganoff's,* which was based upon the same principles, were the only methods showing a mortality under 10 per cent.

Dr. G. T. STEVENS was not present at the Congress, but his paper on the treatment of eclampsia by veratrone (25 cases) was read by Dr. A. W. BOURNE, who also read a paper on a case of eclampsia treated by this drug.

Discussion Resumed.

The general discussion on eclampsia was then resumed by Dr. W. S. A. GRIFFITH, who asked Dr. Eden to explain what was meant by deaths from eclampsia. He thought the discussion was of great value and showed the necessity for uniformity on the part of the various committees who were undertaking this research. But were they all agreed as to what was meant by the term "eclampsia"? Were not convulsions merely one phenomenon of the general disease, which was more widespread and not confined to the appearance of convulsions? In Dr. FitzGibbon's communication toxaemic cases were included, but these were not strictly eclampsia, and the necessity for some generally agreed upon definition as to what they were discussing, and what the committees were investigating, was obviously of great importance.

Dr. T. W. EDEN, replying to the previous speaker, said the sentence in his report which spoke of deaths attributable to eclampsia referred to the clinical diagnosis of the cause of death which appeared in the record, and did not rest upon any *post-mortem* examination. What had been said that morning ought to prove of great value to those who had been working on the reports. They were a little discouraged when the results began to come out because it seemed, as one or two speakers had rubbed into them, that they had produced nothing new, and they felt that they had not advanced in the matter very much. As a matter of fact they had advanced a little in this way. There was a certain amount of unanimity of opinion nowadays that active interference was to be deprecated. If Caesarean section was looked at as a whole, he thought there was no doubt that it had come into increasing disfavour and the results were certainly not good. The most striking communication the Congress had received was from Dublin. They had sat under Dublin before, and personally he was prepared to do so as long as Dublin was producing work as valuable as this. He was not prepared to accept Dr. Hastings Tweedy's theory, but that did not detract from his admiration of the results which had followed from the treatment. In conclusion, Dr. Eden hoped that the inquiry would be continued, and said that they in London proposed to take the initiative, and had drawn up a series of suggestions to be sent to the other societies participating in the Congress, asking them to join in a technical inquiry into the results of the treatment.

Dr. BETHEL SOLOMONS, in reply, said he hoped that the visit of the Irish representatives would not be in vain and that the Tweedy treatment would be given a thorough trial on this side of the water. He again laid stress on the importance of carrying out every small detail of the treatment. In reply to Dr. Herbert Spencer, he said there were no patients with eclampsia without fits in his series of 204 cases. He did not believe there was much future in drugs such as veratrone and pilocarpine, and concluded by urging most strongly a thorough trial of the Dublin treatment.

Dr. GIBBON FITZGIBBON considered that toxaemia was the disease and eclampsia one possible symptom of it; eclampsia

* Professor Stroganoff's method is discussed in an article at page 95.

could not be treated in a separate water-tight compartment. He thought that in Ireland they had proportionately a smaller number of eclampsia cases, and that this was due to the fact that the disease occurred chiefly among the well-to-do artisan class, which was unquestionably a class of big feeders. They were not the really poor class. In conclusion, he insisted on the most careful observation of eclamptic patients, and referred to the very grave risks of suffocation. This complication was more likely to occur if patients were kept in a darkened room, as they sometimes were, because the light was supposed to bring on a fit.

PATHOLOGICAL SESSION.

The Congress held a pathological meeting on July 1st in the Liverpool Medical Institution, the chair being taken by Dr. BETHEL SOLOMONS (Dublin).

Professor BLAIR BELL (Liverpool) read a communication on endometriomata of the ovary, and Dr. HENDRY (Liverpool) described a method of preparing the bony pelvis for the museum.

Specimens were shown as follows:

Dr. FLETCHER SHAW and Dr. ADDIS (Manchester): Adenomyomata of the rectogenital space associated with tarry cysts arising in islands of adenomyomatous tissue in the ovaries.

Dr. LAMOND LACKIE (Edinburgh): (*a*) Uterus containing placental tissue retained for 19 months; (*b*) Chorion-epithelioma occurring in a tubal mole.

Drs. GEMMELL and HENDRY (Liverpool): Double uterus, vagina, and vulva.

Mr. H. REID (Liverpool): Secondary carcinoma of the ovary associated with four months' pregnancy.

Miss FRANCES IVENS (Liverpool): (*a*) Sections from a fatal case of *post-partum* eclampsia; (*b*) specimens illustrating necrobiotic changes in fibroids associated with pregnancy.

Dr. HENDRY (Liverpool): Dermoid cyst of vulva.

Professor BLAIR BELL: Tubal mole removed by incision of Fallopian tube, which was subsequently sutured.

Dr. GEMMELL: Omental tumour, probably sarcoma.

THE ROYAL SOCIETY OF MEDICINE.

ANNUAL DINNER.

THE annual dinner of the Royal Society of Medicine—the first to be held since the outbreak of the war—took place at the Hotel Victoria on July 6th. Sir JOHN BLAND-SUTTON presided, and about 260 Fellows, official guests, and guests of Fellows were present. Among the official guests were Sir Alfred Mond (Minister of Health), H.H. Maharaj Rana Sir Bhawani Singh Bahadur of Jhalawar, the Presidents of the Royal Colleges and of the principal medical societies, Mr. H. J. Waring (Vice-Chancellor of the University of London), Sir Archibald Garrod (Regius Professor of Medicine, Oxford), Sir David Murray (President of the Royal Institute of Painters in Water Colours), Sir Arthur Keith, Sir Rickman Godlee, Sir Dawson Williams (Editor, *British Medical Journal*), and Sir Squire Sprigge (Editor, *Lancet*).

Presentation of Jenner Medal.

After the toast of "Our Patron the King" had been duly honoured the PRESIDENT presented the Jenner Medal to Dr. J. C. McVail. It is awarded on the recommendation of the Epidemiological Section of the Society to some person who has made notable contributions to the prevention of epidemic disease. It has been presented on four previous occasions only, the recipients being Sir William Power, Professor Laveran, Sir Patrick Manson, and Sir Shirley Murphy. Dr. McVail, the President said, was eminently fitted to be the fifth recipient, for although one generation was always chary about accepting the conclusions of its predecessors, it might truly be said that vaccination to-day rested on a surer basis than ever before, and this was due in large measure to Dr. McVail's own admirable work.

Dr. MCVAIL, who was heartily acclaimed, expressed his gratitude for the honour done him, and mentioned that next year was the centenary of the death of Edward Jenner. The great conception of Jenner that cow-pox was a preventive of small-pox, formulated as it was at a time when small-pox was the most prevalent and destructive of all pestilences, had been the means of saving more lives and preventing more misery than any other discovery or the work of any other man from the dawn of history up to Jenner's day.

The Royal Society of Medicine and Kindred Societies.

The PRESIDENT, in proposing prosperity to the Royal Society of Medicine, said that it was now in a better position than at any period since the amalgamation in 1907. In consequence of the policy of the Council in raising the subscription and effecting economies, it now enjoyed an increased income, and with the help of a munificent legacy from Dr. Lloyd Roberts the treasurers had been able to reduce the overdraft at the bank. He spoke of the profit he received in his own early days from the library of the Royal Medico-Chirurgical Society. One of the first papers he remembered hearing read was on the harlequin foetus, and Dr. Samuel Wilks had then told him how the term originated. About eighty years ago a celebrated lecturer in midwifery at Guy's attended a poor woman who was delivered of a foetus of this kind. He said to her, "You must have been frightened by a harlequin," and she replied that that was exactly what had happened; the harlequin had startled her by jumping over the footlights at the Surrey Garden Theatre. That particular harlequin was very popular among the women of the neighbourhood, and Wilks believed that that was the reason why Guy's at that time possessed four of the six specimens of the harlequin foetus then to be seen in London. The speaker went on to picture Aesculapius on earth again, finding his way to No. 1, Wimpole Street, delighted at such a temple in his honour, delighted, too, at his statue in the reading room, though suffering momentary chagrin on finding that it was plaster and not marble, and congratulating Sir John MacAlister on his ambition to make the Society the centre for scientific medicine.

The toast of "The Kindred Societies" was proposed by Sir HUMPHRY ROLLESTON, who mentioned the curious fact that this year the Presidents of the Medical Society of London, the West London Medico-Chirurgical Society, and the Ophthalmological Society were all of them surgeons. He had a fitting word of compliment for each of these bodies, and for the others represented at the table: the Chelsea Clinical Society, the Veterinary Society, the Medico-Psychological Association, and the Fellowship of Medicine, which last had been singularly happy in its presidents—first Sir William Osler, and now Sir George Makins. In coupling the toast with the name of the President of the Medical Society of London, he remarked on the amicability of the relationship between the two societies.

Mr. JAMES BERRY, in response, said that the Royal Society of Medicine, which was a collection of societies, ought not to use the word "Society" in its title; a name like "The Royal Academy of Medicine" would be more appropriate. He liked to look upon the Royal Society of Medicine as a great central luminary, radiating light upon the other medical bodies. If he regarded his own society as corresponding to the earth in that solar system he might be forgiven. The Royal Colleges stood for Mars and Neptune; massive Jupiter was the British Medical Association, and its nine satellites were the Association's executive committees. Brilliant Venus was, of course, the Medical Women's Federation, while our own moon could be no other than the Medico-Psychological Association. The Fellowship of Medicine might be taken to be of the goodly company of minor planets, and the medical firmament was not without its splendid meteors and comets in the shape of distinguished strangers who came from distant realms from time to time.

The Ministry of Health.

Sir THOMAS HORDER mentioned the names of other notable visitors, including three medical men from overseas (Professor A. F. Hess and Dr. H. D. Chapin of New York, and Professor H. S. Birkett of Montreal), and in coupling with the toast of "The Guests" the names of Sir Alfred Mond and Lord Riddell, he remarked that some people were asking what the Ministry of Health was doing, but it was possible that any apparent lack of activity might be due to the fact that it was giving what was known as "expectant treatment," which was sometimes more beneficial to the patient than more active measures.

Sir ALFRED MOND could not agree that his department was in any way inactive. A Ministry charged with the duty of supervising the health of the country could never relax its vigilance nor free itself from anxiety, especially at a time when economy had to be considered. The Ministry had escaped somewhat lightly from the Geddes "axe," without curtailment of any of the great services. No doubt more could and would be done in more propitious times. One very important work in which the Ministry was interested was the provision of facilities for post-graduate education. He was very glad that the Rockefeller trustees had made a donation of two million dollars towards a building for an imperial school of hygiene, which would be a model of its kind in the Empire, and, he believed, in Europe. He had persuaded the Chancellor of the Exchequer to grant

the necessary endowment to make the school a living thing, and he looked forward to the accomplishment of much research in preventive medicine, not only such as directly concerned this country, but such as affected the tropical colonies. Upon such preventive work the future of the Empire in no small measure depended. Sir Alfred Mond went on to refer to the integration of medicine with social welfare, and to his duties with regard to the supervision of the 12,000 insurance practitioners. Very rarely, he was glad to say, was it necessary to use disciplinary measures. These practitioners were responsible for the health of a vast mass of the adult population, whose efficiency determined the economic and industrial prosperity of this country. The work of the insurance practitioner was arduous, but at least he had the satisfaction, unlike some of his West End colleagues, of receiving prompt payment and of having no entries in his books which failed to materialize into cash. The Ministry of Health had lately been closely concerned with the hospital problem. The devising of means for keeping the voluntary hospitals in existence had meant a great deal of anxiety to him and to Lord Onslow, who had occupied the chair of the Voluntary Hospitals Commission. The response of the general public had been very satisfactory considering the difficulties of the present time, and it seemed likely that hospitals would be placed on a more satisfactory basis than in the past, when they depended largely on spasmodic appeals by treasurers *in extremis*. His department had its international aspect, wherein it was well served by the able officers who represented it on international organizations and conferences. Science was healing the scars left by war. He had been appalled lately to read of the condition of things in Russia, where a vast territory was ravaged by typhus, relapsing fever, and cholera, and was threatened at the same time by starvation and lack of medical resources. The Russian medical profession had manfully stuck to an almost impossible task, but the epidemics in Russia must cause anxiety to all who were charged with the maintenance of health in other countries. He was co-operating at the moment in the provision of medical assistance for the Russian people under the auspices of the League of Nations. The help took the form of medical relief and the provision of drugs and serums, with a view to stemming the tide which had already flowed over the Russian borders into Poland and Rumania. He heard of populations of ten thousand people moving blindly about the country, many dying by the roadside, and the others spreading diseases wherever they went, finally reaching the Polish boundary, where they housed themselves in some old German dug-outs. Altogether the Ministry of Health was kept fairly busy, and not merely busy, but sometimes harassed. His own relations with the medical profession had been most cordial, and assistance had been given him most willingly on all subjects. The difficult controversy between rival societies on the question of venereal disease seemed likely to reach a definite conclusion, thanks to Lord Trevethin's Committee, appointed at the suggestion of Lord Dawson. Speaking as a politician, he thought it of enormous importance to medical science that medical men should agree—"at any rate in public." Patients in the consulting room were submissive and obedient, but the public generally was a little sceptical about the wisdom and knowledge of the profession, and if different sections of medical men continually contradicted one another in public it would give the opportunity to the layman to urge that the Ministry of Health should pursue a do-nothing policy. At present he was engaged in consultation with experts on lunacy reform; by general admission no subject was calling more urgently for amending legislation. He had no doubt that whatever he introduced would be criticized by one section or another, but he would beg medical men not to roughen his pathway when he went out to meet the Philistine.

Lord RIDDELL contrived, amid much amusing persiflage, to pay one little compliment to the medical profession. He said that it was not generally known that medical men were the chief subscribers to hospitals; not, indeed, in the total amount, but in the number contributing. It was surprising how substantial a part of the funds of the various institutions came out of the pockets of medical men. He had seen some discussion on the propriety of a doctor charging three guineas for a consultation, but when he remembered how in the mercantile world a trader would hold up an essential article to get a higher price, he did not think that doctors, who never held up their services, could justly be accused of fleecing the public.

The final toast was that of "The President," proposed by Sir JOHN GOODWIN, who laid stress upon the many outstanding qualities of Sir John Bland-Sutton as a surgeon and as a friend; and, the toast having been most heartily honoured, Sir JOHN BLAND-SUTTON, in reply, said that his presidency of the Society, which virtually ended with that function, had brought him one great delight—the opportunity of coming into touch with the younger members of the profession.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

ON several recent occasions we have mentioned the main items in the programme of the third International Congress of the History of Medicine, to be held in London during the third week of this month. We are now able to publish in more detail the time-table of the Congress.

Throughout the meeting the headquarters of the Congress will be the house of the Royal Society of Medicine (1, Wimpole Street, W.1). Objects of interest will be on view in the Library of the Society, and a special loan exhibition will be open daily from 10 a.m. to 5.30 p.m. in the Wellcome Historical Medical Museum, 54a, Wigmore Street, W.1. On the opening morning (July 17th) members should register at the Congress Bureau in the entrance hall of 1, Wimpole Street, and obtain their badges, cards of membership, and invitations. A Committee of Ladies has arranged to take ladies attending the Congress to various places of interest in London. The General Secretary of the Congress is Dr. J. D. Rolleston, 21, Alexandra Mansions, King's Road, S.W.3, and the Treasurer is Mr. W. G. Spencer, 2, Portland Place, W.1.

TIME-TABLE.

Monday, July 17th.

10.30 a.m.—Opening of the Congress at the Royal Society of Medicine by the Minister of Health. Reception of delegates. Address by the President, Dr. Charles Singer. Address on behalf of the foreign delegates by Professor Laignel-Lavastine.

2.15 p.m.—Reception and address by Sir Humphry Rolleston, President of the Royal College of Physicians, at the College, Pall Mall East, where books, manuscripts, and other objects of historical interest will be shown.

3.30 to 6 p.m.—Afternoon tea offered by Sir D'Arcy and Lady Power, 10a, Chandos Street, Cavendish Square.

9 p.m.—Reception by the President and Mrs. Singer at the Royal Society of Medicine. An address will be given during the evening by Professor Elliot Smith on palaeolithic skulls and brain casts.

Tuesday, July 18th.

10 a.m. to 12.30 p.m.—Papers on the history of epidemic diseases by Dr. Tricot-Royer of Antwerp, Dr. Cavvadias of Athens, Professor W. R. Simpson, Mrs. Singer, Dr. E. Wickersheimer of Strasbourg, Dr. Neveu of Paris, Sir William Collins, Miss Buer, and Dr. Michael Foster.

2.30 to 4.30 p.m.—Papers on the history of anatomy, etc., by Professor Laignel-Lavastine of Paris, Dr. de Lint of Gorinchem, Professor W. Wright, Dr. E. T. Withington, and Dr. F. J. Poynton.

4.30 p.m.—Reception by the Lord Mayor and Lady Mayoress at the Mansion House.

7 to 11.30 p.m.—Reception by Sir James and Lady Purves Stewart, 94, Harley Street.

Wednesday, July 19th.

10 a.m. to 12.30 p.m.—Papers on the history of anatomy by Professor Ménétrier, Dr. Villaret, and M. Fosseyeux of Paris, Dr. Krumbhaar of Philadelphia, Dr. Singer, Dr. F. K. Lander, Mr. W. G. Spencer, Dr. T. Wilson Parry, and Dr. J. D. Comrie.

Afternoon.—Visits to the Barbers' Hall, Royal College of Surgeons, and Apothecaries' Hall.

8.30 to 11 p.m.—Conversazione at the Wellcome Historical Medical Museum.

Thursday, July 20th.

10 a.m. to 12.30 p.m.—Papers on the history of anatomy by Dr. Tricot-Royer of Antwerp, Dr. Torkomian of Constantinople, Dr. D. Campbell, Professor Jeanselme of Paris, and Dr van Gils of the Hague. Papers on various subjects by Professor Lindsay, Dr. de Lint, and Dr. N. G. Horner.

2.30 to 4.30 p.m.—Papers on the history of pharmacy by Dr. Dorveaux of Paris, Mr. J. B. Gilmour, and Mr. C. J. S. Thompson.

Friday, July 21st.

10 a.m. to 12.30 p.m.—Papers on various subjects by Dr. van Gils, Dr. Sigerist of Zurich, Dr. Wickersheimer, Dr. A. F. de Alcalde of Madrid, Dr. Le Clerc, Dr. Le Lorier, and Dr. Capparoni.

2.30 p.m.—Papers on the history of veterinary medicine by M. Sevilla of Paris, Major-General Sir F. Smith, M. L. Moule, Mr. F. E. Bullock, and Mr. F. J. Cole; and on various subjects by Dr. P. Delaunay of Le Mans, Professor Castiglioni of Trieste, Dr. Sunderland, Mme. Panayotatou of Alexandria, and Dr. Muthu.

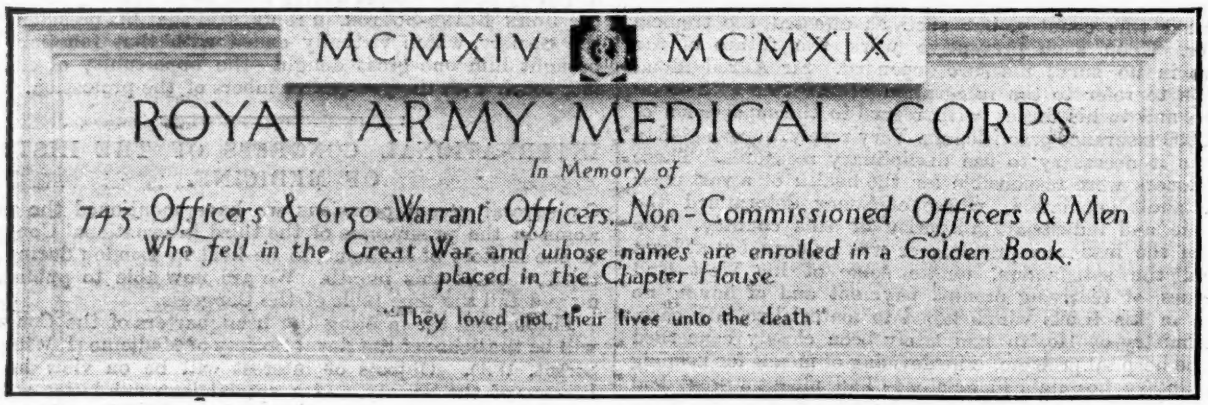
5 p.m.—Visit to St. Bartholomew's Hospital, and historical address by Sir D'Arcy Power.

7.30 p.m.—Banquet at the Hotel Cecil. (Tickets 10s. 6d. each.)

Saturday, July 22nd.

Excursion to Windsor Castle and up the River Thames.

THE ROYAL ARMY MEDICAL CORPS WAR MEMORIAL.


MCMXIV MCMXIX
ROYAL ARMY MEDICAL CORPS
In Memory of
743 Officers & 6130 Warrant Officers, Non-Commissioned Officers & Men
Who fell in the Great War and whose names are enrolled in a Golden Book
placed in the Chapter House
"They loved not their lives unto the death."

WHILE this issue of the JOURNAL is at the press the Royal Army Medical Corps War Memorial in Westminster Abbey is being unveiled by Field-Marshal H.R.H. the Duke of Connaught, Colonel-in-Chief of the Corps. As stated last week the amount available out of the memorial fund—in round figures £18,000—has been used in three ways: (1) to erect in Westminster Abbey the tablet commemorating the 743 officers and the 6,130 warrant officers, non-commissioned officers and men of the R.A.M.C., Regular, Territorial, and Temporary, who fell or died in the war; (2) to inscribe their names in a "Golden Book" placed in the Chapter House of the Abbey; and (3) to contribute £10,000 to the Abbey Restoration Fund.

We reproduce above a photograph of the marble memorial tablet. It has been placed on the north side of the nave near the west door of the Abbey and on a level with the foot of the Unknown Warrior's grave. It is the work of Mr. F. J. Wilcoxson, of the Royal School of Art, South Kensington. The Committee of the Fund has decided that a photograph of the tablet, together with a plan of the Abbey showing its position, shall be sent to the relatives of each officer and man mentioned in the "Golden Book."

An invitation from the Director-General Army Medical Services and the Committee of the Fund was addressed to the President and Council of the British Medical Association requesting their presence at the unveiling, and this has been accepted. An account of the ceremony will appear in our next issue.

MENTAL HOSPITALS ASSOCIATION.

THE annual meeting of the Mental Hospitals Association was held in the London Guildhall on July 7th. Alderman J. G. TAGGART, of Winwick, Lancashire, who presided, declared that the Association was unanimous in its demand for the reform of the obsolete lunacy laws. Under the present system only people who were certifiable—in other words, those who were far advanced in insanity—could be taken into mental institutions. It was imperative that there should be legislation whereby incipient cases of insanity could be properly dealt with.

Sir G. WYATT TRUSCOTT (City of London) said that it was not yet certain that the projected legislation would contain any adequate provision for early treatment, and therefore he moved that a letter should be sent from the Association to the Ministry of Health and the Board of Control expressing the strong hope that the promised bill for the amendment of the lunacy laws would contain a clause under which arrangements might be made for the early treatment of mental cases without certification. This was supported by other speakers, and carried unanimously.

Alderman H. E. WITARD (Norwich) urged that the attention of the Board of Control and the Ministry of Pensions should be drawn to the great hardship experienced by ex-service men admitted to public mental hospitals and denied classification as service patients on account of the interval that had elapsed between their demobilization or discharge from the forces and their readmission to the hospital. He said that several cases were known to him in which men had been discharged from the army and had taken up occupations in civil life, and then, breaking down, had gone into the mental hospital, where a medical board had decided that their mental disability was due to their war service, and yet, in spite of this finding, the Ministry of Pensions through the Board of Control had intimated that as the disability had not developed at an earlier period the men were not entitled to enjoy the privileges accorded to ex-service patients. This was penalizing the men who had struggled on after their discharge in an endeavour to avert the final breakdown. A resolution on this subject was agreed to unanimously.

Sir WILLIAM HODGSON, M.D. (Cheshire), brought forward a motion urging that in mental hospitals and workhouses where accommodation of a satisfactory character could be provided arrangements should be made for the worst cases of mental defectives to be received into such institutions. He said that it was very difficult at the present time to deal with the worst type of cases. He would not suggest that this course should be followed in the case of deficients who were educable, but there was a class of cases which was the despair of all concerned—some of the deficients being vicious, and others quite unable to take care of themselves, and these should certainly be housed in mental hospitals if satisfactory accommodation could be arranged. The motion, after some discussion, was agreed to.

A question which aroused a good deal of discussion was as to the status, duties, and rates of pay of mental hospital workers. A joint conciliation committee has been sitting and has formulated certain recommendations which have been agreed to by the executives both of the Mental Hospitals Association and the National Asylum Workers' Union, but a ballot on the subject is now being taken among the members of the latter body. The recommendations suggest that the working week should not exceed sixty-six hours, inclusive of meal times, for all members of the indoor staff; that each member of the indoor staff should be allowed twenty-one days' leave every year; and that the minimum wage to be paid to the male nurses in mental hospitals in rural areas should be 35s. a week. It is recommended also that the wages and increments of probationer nurses should be readjusted, and that in all cases the payments to female nurses should be 20 per cent. less than the payments to male nurses.

Mr. Francis Bate, J.P., of Reading, was elected chairman of the Association.

A CONFERENCE on Mental Deficiency arranged by the Central Association for Mental Welfare will take place in the Caxton Hall, Westminster, London, on Wednesday and Thursday, July 26th and 27th. The conference will be opened on July 26th by Sir Leslie Scott, K.C., M.P., Solicitor-General, and afterwards a paper on "Crime and mental deficiency" will be read. Dr. Norwood East, of H.M. Prison, Brixton, will discuss criminal defectives. At the afternoon session, under the chairmanship of Dr. Reginald Dyer, H.M. Commissioner of Prisons, papers will be read by Mr. Stuart Deacon, stipendiary magistrate of Liverpool, and Mrs. Patrick Green, J.P., Colchester, and on the conclusion of this day's proceedings an address will be given by Lord Justice Atkin. On Thursday, July 27th, the morning session will be devoted to the hearing of an address by the Rt. Hon. H. A. L. Fisher, President of the Board of Education, and a paper by Dr. H. B. Brackenbury, chairman of the Education Committee of the conference. Short addresses and a discussion will follow. On Thursday afternoon the chair will be taken by Sir Frederick Willis, K.B.E., C.B., chairman of the Board of Control. Papers will be read and a number of short addresses delivered. Those interested may obtain copies of the papers to be read at the cost of 1s. a set, post free, from the offices of the C.A.M.W., 24, Buckingham Palace Road, S.W.1, one week before the conference. Tickets, admitting on both days of the conference, may be obtained at the charge of 2s. 6d. each from the above-mentioned offices.

British Medical Journal.

SATURDAY, JULY 15TH, 1922.

TREATMENT OF PUERPERAL ECLAMPSIA.

IT will be seen from our report (p. 88) of the British Congress of Obstetrics and Gynaecology, held lately in Liverpool, that the first morning was devoted to a discussion on the treatment of eclampsia. This important debate centred round a number of reports prepared by special subcommittees, which have been studying the matter in London, in the North, and in the Midlands; and, as several speakers remarked, its chief value may prove to be the stimulus it must give to further research, along parallel lines, in the principal cities of Great Britain and Ireland. The wider aspects of the treatment of puerperal eclampsia we do not ourselves propose to discuss at this moment, but shall refer only to a particular line of treatment brought to our notice from another quarter.

We have received from Professor Stroganoff, Director of the Clinical Institute for Obstetrics and Gynaecology at Petrograd, a letter dated June 12th, expressing his desire to make his method of treating puerperal eclampsia better known in this country, and his hope that he may have an opportunity of coming here and treating a certain number of cases. According to the account in Eden's *Manual of Midwifery* (1919), Stroganoff gives the patient a quarter of a grain of morphine hypodermically, and an hour later 30 grains of chloral by the mouth; two hours later the morphine is repeated, and the chloral six hours after the first dose. In all, four doses of chloral and two of morphine may be given in twenty-four hours. As soon as the convulsions cease and the conditions are favourable labour is induced. In his first 360 cases, reported before 1908, the death rate was reduced to 6.6 per cent. for mothers and 21 per cent. for children, from previous rates of 20 to 25 per cent. for mothers and 30 to 55 per cent. for children. Professor Stroganoff states in his letter that during the last eight or ten years he has improved the method, so that the description above given probably no longer applies. The results obtained have been still more satisfactory. At the Clinical Institute of Obstetrics and Gynaecology, and at Professor Krassovski's lying-in hospital, 223 cases of eclampsia with fits have been treated, with only three deaths (1.3 per cent.); two out of the three patients who died had had numerous attacks (fifteen to twenty-eight) before admission, and expired within three to four hours. The third patient had only four attacks of eclampsia, but died of pneumonia and sepsis fifteen days after delivery. In the 220 cases which recovered there was rapid cessation of attacks, amelioration of the general condition, lowering of blood pressure, and return to consciousness. He therefore regards eclampsia as curable, except in cases in which treatment has been too long postponed. After a visit Professor Stroganoff paid to Vienna, Professor Leopold in 1910–11 treated 50 patients, with only four deaths, all in cases which were suffering from severe complications when admitted. Leopold's death rate had previously been 19 per cent. for mothers and 55 per cent. for children. At about the same time Professor Kapferer reported a series of cases from Professor Krönig's clinic in Freiburg, without a death. In 1913 Professor Zweifel, using the method in combination with bleeding, had a gross mortality of 8.5 per cent.; he states that, if accidental deaths are omitted, the mortality may be reduced to 2 or 3 per cent. In 1911 Professor Stroganoff went to Berlin and treated a certain number of cases; all the patients recovered, but in his letter he does not state the number.

Professor Stroganoff complains that the arrangements for testing his method in Vienna and Berlin were not satisfactory, and continues: "If the leading London lying-in hospitals agreed to place in my hands the treatment of all cases of eclampsia for a period of two, three, or four months, the total number would probably amount to as many as 20 to 40 cases, which, added to those already on record, would be conclusive evidence in favour of the new method, both from the point of view of its usefulness and as a demonstration of its technique." He adds that in 1918 he collected from the journals then available at Petrograd 2,208 cases of eclampsia treated by the method he describes in its original form, or slightly modified. The mortality of mothers was 9.8 per cent., and that for children 12 per cent. below the average for other methods of treatment.

In concluding his letter Professor Stroganoff makes an appeal to obstetricians in this country, and mentions the name of Dr. Herbert Spencer, to whom we have referred this note and the original letter. We are indebted to Dr. Herbert Spencer for the following observations:

"I have received your note on my return from the Obstetrical and Gynaecological Congress at Liverpool, where the important subject of eclampsia was discussed and the high mortality of this grave complication was emphasized by a large collection of statistics. At the Congress two important facts were elicited: (1) the danger of the operative treatment of eclampsia, and especially by abdominal Caesarean section; (2) the superiority of the eliminative method originated by Dr. Hastings Tweedy and practised with gratifying results at the Rotunda Hospital. Statistics were presented at the Liverpool Congress of 204 cases treated by the Dublin method, with a mortality of 21 (10.29 per cent.), which contrasts with the general mortality rate of over 20 per cent., and with the extensive statistics presented by the North of England Obstetrical and Gynaecological Society, in which the mortality in 804 cases was 24.45 per cent.

"No one has obtained results in the treatment of eclampsia approaching those stated by Professor Stroganoff, and it is a matter of supreme importance that these two methods (Tweedy's and Stroganoff's) should be tried on a large scale. One feature of Stroganoff's method on which he lays (or, at least, used to lay) stress—a dark lying-in room free from noise—is not easy to obtain. And I think there would be difficulty in getting for all cases the personal attention of Dr. Stroganoff even in the large lying-in hospitals, though I have no doubt that the staffs would be willing to allow their cases to be treated by him. The distances between the various hospitals would render early treatment by Dr. Stroganoff very difficult or impossible in some instances.

"No one can fail to be struck with Dr. Stroganoff's results. If they could be obtained universally they would constitute a very great advance in therapeusis. If you could obtain from Dr. Stroganoff details of his latest method I, and I am sure most other British obstetricians, will be glad to give it an extensive trial. I know Dr. Stroganoff and the excellent work he and Madame Stroganoff have done in obstetrics and gynaecology, and I remember well the impression made by his communication at the Berlin Congress ten years ago. But his latest results are so remarkable that the method ought to be tried by others, and the enthusiasm of the younger British obstetricians is such that, if full details of the most recent method can be obtained, I am sure they will give it an extensive trial."

WHAT IS A "CONSULTANT"?

ON another page we reproduce in full from the *Times* the judgement delivered last week by Mr. Justice McCardie in the action brought by Dr. Anghel Gaster against Mr. Leopold Hirsch to recover fees for professional attendance. The learned judge dealt so fully with all the aspects both of the claim and of the defence that comment here on the individual case does not seem necessary. But certain broad questions, which arise out of the judgement, are of general interest and importance to the medical profession and demand further consideration.

It was admitted by the judge that, where there has been no agreement as to fees beforehand, the amount to be determined as a just and fair remuneration for medical services must depend, *inter alia*, upon the status of the doctor, and that a consultant is entitled to higher fees than a general practitioner. In mentioning the plaintiff's fees as 3 guineas for the first consultation and 2 guineas for the second, Mr. Justice McCardie said that the range of fees must be remembered in the light of the resolution passed by the British Medical Association in 1919—that an increase of at least 50 per cent. on pre-war medical fees should be made. The British Medical Association, he added, had no statutory authority, but its opinions carried great weight throughout the medical profession.

Cases such as this accordingly involve a definition of the word "consultant," and it is probable that in similar actions in future the judgement given by Mr. Justice McCardie will be quoted by one or other side. It is, however, impossible to discuss the question without opening up wider issues. In more than one Government department with a medical branch medical men are employed in two grades—namely, those with a general knowledge of medicine and those with special knowledge or experience of a particular subject. The latter are sometimes described as "consultants" and sometimes as "specialists" and are paid at a higher rate. We are not aware of the conditions which the Government requires to be fulfilled before recognizing a medical man as a specialist or consultant, but we do know that in some instances the decisions of the departments have given rise to much dissatisfaction. We do not propose to attempt to frame a definition here, but some of the difficulties associated with the problem may be indicated.

In the course of his judgement Mr. Justice McCardie said: "In its rigorous significance, a consulting physician is one who acts only in conjunction with, or upon the introduction of, a family doctor." No fault can be found with this definition except the fact that it is not always observed. At one time the customary procedure of the profession seems to have provided a means of differentiation which was of very general application: the consulting physician diagnosed the malady or advised on treatment and left the family attendant to carry out the treatment; the consulting surgeon performed the operation jointly decided upon, and the family attendant took charge of the after-treatment. But more and more this custom is being departed from, particularly where the whole, or the major part, of the treatment is given by the consultant. Several branches of medicine in which the consultant frequently takes patients direct might be mentioned, but we may instance the more expert methods of psycho-therapy which have been developed during recent years. It is well known that many who have made a special study of psycho-analytic procedure are now practising as specialists, and do not consider it in any way incumbent upon them only to accept patients introduced by a general practitioner. We regret this tendency, and are of opinion that the interests of both the community and the profession would be best served by maintaining the older tradition, but all these practitioners cannot be refused the title of consultant because they have cast tradition aside.

Other criteria for determining the consultant status might be mentioned. There is, for example, the possession of the Membership of the College of Physicians. But some whose consultant rank would not be questioned do not possess this qualification, and some who hold it are admittedly engaged in a form of practice which cannot easily be distinguished from general practice. Again, the holding of an appointment on the staff of a hospital is often sufficient to connote the higher status, but this is not invariably the case, particularly in the smaller towns, and it could not be used as a universal means of distinction.

The remarks made so far apply mainly to London and other large cities with medical schools; when we come to smaller provincial towns other considerations must be admitted. In some such towns there is not work enough for a man of admittedly consultant rank to occupy himself fully in his own sphere, and he is obliged to go outside his specialty or devote part of his time to general practice. Again, we have to consider the position of the man who is primarily and avowedly a general practitioner, but has made a special study of some particular subject, and on this subject is frequently consulted by his colleagues in general practice. At one time he may act as a specialist to his own patient, and at another time as a consultant for the patient of another practitioner.

Sufficient has been said to show how difficult it would be to frame any hard and fast definition of a "consultant." If the line between consultant and general practitioner is hard to draw nowadays, the distinction between consultant and specialist is impossibly nebulous. We are, however, of opinion that it is important both for the community and the profession that a distinction should be drawn between one who is discharging the functions of a general practitioner and one whose opinion is sought because he possesses a special knowledge of some particular part of Medicine—a distinction which may be recognized by the application of one or more of the tests suggested above; but we strongly deprecate the view that a man becomes a consultant, and consequently entitled to charge higher fees, merely by living in or having a consulting room in a particular street or district. The distinction does in fact exist, and members of the profession themselves have rarely any difficulty in drawing it; but for legal or Government purposes we do not consider that it is possible to lay down a rule of universal application. Each case should be considered on its merits and a degree of elasticity recognized appropriate to the particular circumstances.

AURICULAR FIBRILLATION.

AURICULAR FIBRILLATION must always be a subject of very considerable interest to all medical practitioners, for it is the commonest and most important cause of cardiac failure.

In the Oliver-Sharpey lectures of 1921 Sir Thomas Lewis discussed the essential nature of this disorderly rhythm, and proved as the outcome of prolonged experimental investigations that there is a specific change in the activities of the auricles coincident with the onset of fibrillation, and that this change is of the nature of a simple circus movement around one of the venous orifices of the right auricle. The fact that his investigations had been undertaken with a bias against the theory of circus movement, as enunciated by Mines in 1913, lends additional weight to his final conclusions published in 1921.

In these lectures no opinion was expressed as to the cause of this remarkable and specific change. Sir Thomas Lewis dealt rather with the nature of the condition when

once established. Up to the present the investigation of fibrillation has been an attempt to understand the deviation from the normal activity of the heart and to explain the altered mechanism, and no one has done more to throw light on this than Sir James Mackenzie.

So far, however, investigators have not been able to discover the causal factors involved. The question is discussed by Sir James Mackenzie in a valuable and suggestive paper which we publish this week. He expresses the view that the auricle begins to fibrillate as the result of loss of the normal controlling influence exercised by the sino-auricular node and other portions of the conducting system. Freed from this control, the auricular muscle passes into a state of fibrillation; in other words, fibrillation is the result of a process and not the process itself.

This is in itself an interesting suggestion, but Sir James Mackenzie goes farther and makes the point that auricular fibrillation is only one example of a general law; and he compares the happenings in the auricles with those in other organs or tissues when freed from control. He relates, for example, the observations of Professor Langley on voluntary muscle after its motor nerve had been severed. Langley found that the muscle did not remain inert but sooner or later began to fibrillate. Sir James Mackenzie infers from this the existence of a law governing the activity of the muscles, and suggests that the law applies not only to the voluntary muscles but also to the myocardium. Control is essential to the well-being and normal functioning of the muscle fibre. Remove this control and fibrillation ensues. Reference is also made to the "paralytic secretion" of the salivary gland on section of its nerve supply, and other changes in muscular activity are mentioned as the result of similar interference. He suggests that "there seems to be some law or principle which governs the functions of the organs of the body by which they are controlled by higher agencies." This is a rather vague statement, but it is, perhaps, impossible to go farther at present. An influence of this nature is, of course, well exemplified in the functioning of the central nervous system, familiar to all, where the brain takes control of the spinal centres and the higher levels of the brain exert their influence on the lower.

It is indeed well that we should search for the laws underlying the manifestations of disease, and we are indebted to Sir James Mackenzie for this attempt to stimulate further investigations along these lines. An understanding of the signs and symptoms of disease is only possible when the mechanism by which these signs and symptoms are produced is clearly apprehended; the recognition of any law which has a general application will do much to forward our knowledge of medicine. He does not, of course, put his views forward as if they were established, but rather to stimulate thought and discussion.

SIR PATRICK MANSON.

THE mid-June issue of the *Journal of Tropical Medicine and Hygiene* is a special Manson number. In contains an introductory notice by Sir James Cantlie, one of the editors, who pays a warm tribute to Sir Patrick Manson as a scientific investigator, a physician, and a man. It contains also a number of other appreciations, including one by Sir Frederick Mott, in which he speaks of Manson as the founder of tropical medicine. There are tributes to him as a bacteriologist by Professor R. T. Hewlett, as a dermatologist by Dr. J. M. H. MacLeod, and as a helminthologist by Dr. H. A. Baylis, of the Natural History Museum. There are, in addition, papers by Dr. Giglioli on acclimatization and sunstroke, a synopsis of the family Linguatulidae by Dr. L. W. Sambon, a lecture by the same author on tropical and subtropical diseases, in which the part played by Manson is fully set forth, and an essay on the carriers of *Filaria bancrofti*, by Mr. F. W. Edwards, published by permission of the trustees of the British Museum. Mr. S. Honeyman, librarian to the British Medical Association, has contributed a bibliography of Sir Patrick Manson's writings, the first entry being dated 1878, and the last the seventh edition of his *Tropical Hygiene*, 1921. The pages to which the pupils of Manson will probably first turn are those which contain an autobiographical fragment dictated to Dr. Sambon. It begins by telling the story of Manson's early attempt to become an engineer, terminated by a breakdown in health. He passes lightly over his time as a medical student at Aberdeen and Edinburgh, and then takes us to Formosa, where he landed in 1866, and where his chief achievement was to become acquainted with Chinese customs and gain a colloquial acquaintance with the language. He then passes to Amoy, where, in 1871, he settled down among the European colony and lived for many of the most active years of his life. There he had the run of a large Chinese hospital, and devoted himself especially to the study of elephantiasis and to the life-history of filaria. Almost by accident he hit upon the fact of periodicity, and soon instituted an investigation during which blood examinations were made every three hours for six weeks. It is characteristic of Manson's power of influencing men that the experiment was made by two natives who themselves had filaria in their blood. "I trained them," he said, "in the use of the microscope, and set them to work to examine each other." As the filariae in the blood were immature, the problem was how and where these larval filariae, carried about in the blood stream, underwent development and became mature. "It was evident that, fettered in sacs (their outstretched, unbroken egg-membranes) and penned within the circulatory maze, they could not, of their own accord, leave the human body. . . . I set myself to speculate as to what that agency might be which removed and fostered the newborn filariae. It must be, thought I, something that draws out the blood and therewith the organisms in the blood; moreover, seeing that the filaria is confined to tropical and subtropical countries, this something must have a corresponding distribution. What might it be? A tropical blood-sucker. What tropical blood-sucker? The filaria is a common parasite within the tropical belt, and therefore this blood-sucker must be common there also. For reasons of distribution, season, and habits, neither leech, nor flea, nor bug seemed to answer the requirements. Could it be a mosquito, some species of mosquito widespread and common in the tropics? Thus I reasoned." He proceeded to make the crucial experiment upon one of his Chinese servants who was infested by the filaria and agreed to submit to the experiment in consideration of the payment of one dollar. Manson then went on to relate the discovery, while he was looking for filaria, of a new parasite, *Paragonimus westermanii*. "I was not," he wrote, "looking for this parasite when I found it, for a man may search for a shilling and find a sovereign. The important thing is to search." He then passes on to his investigations of leprosy and of various epiphytic skin diseases, and laments his poor equipment in microscopes; but in one respect his opportunities were unrivalled, and that was in the study of the great number of patients in the Chinese hospital; of these opportunities he took the utmost advantage, devoting to them all his spare time. "It was," he says, "my laboratory, my school." Here the autobiography breaks off.

MEDICO-HISTORICAL TREASURES OF GLASGOW.

AMONG those who propose to attend the ninetieth Annual Meeting of the British Medical Association in Glasgow this month there must be many who will be glad to know something of the medical manuscripts and early printed books and other historical treasures possessed by the medical institutions of that city. For their benefit the July issue of the *Glasgow Medical Journal* contains two interesting notes: one by Mr. Mungo Ferguson, M.A., Sub-Librarian of the University, on some medical manuscripts and early printed

books in the Hunterian Library; and the other by Mr. Walter Hurst, Secretary to the Royal Faculty of Physicians and Surgeons, on some interesting possessions of the Faculty. The Hunterian Library of the University of Glasgow contains some 600 MSS. and 12,000 volumes of printed books. The printed works include about 500 volumes dated prior to the year 1500, and of these incunabula 12 were printed by William Caxton. There are many rare editions of the classical authors, works on general literature, and a large number of pamphlets, but the greater part of the library is made up of medical works by Arabian and Greek physicians and by well-known medical writers, English and French, of the sixteenth to the eighteenth centuries. The principal monument to William Hunter is, of course, the Hunterian Museum in Glasgow, but the Hunterian Library owns several of his manuscript works, amongst them his *Anatomy of the Human Gravid Uterus* and his *Journal of Attendance on Her Majesty Queen Charlotte as Physician Extraordinary*. Many of the volumes in this library contain interesting plates of parts of the human body, of operations, instruments, etc., and an effort will be made to exhibit as many of these as possible during the meeting of the Association. Mr. Ferguson in his note indicates some of the most interesting and earliest printed books and manuscripts in this collection. The former include *Tractatus de Venenis*, by Pietro d'Abano, printed at Mantua in 1473; the *Chirurgia* of Pietro d'Argleta (Venice, 1480); the first edition of Celsus, *De Medicina Libri VIII* (Florence, 1478); the *Chirurgia* of Guy de Chauliac (Venice, 1499); Salicet's *Tractatus de Salute Corporis*, printed in Holland, circa 1467; and a Latin translation of Avicenna's famous *Canon of Medicine*, dated 1482–83. The manuscripts include two other copies, written in the early thirteenth and the fifteenth centuries, of works by Avicenna; also the fourteenth-century MS. in a French hand of a work by the distinguished Arabian translator of Greek medical authors, Hunain Ibn Ishak, known during the Middle Ages in Europe as Joannitius. Among other manuscripts in the Hunterian Library are early versions of the *Practica Chirurgie* and the *Opera* of John of Arderne, the father of English surgery, and of Lanfranc's *Chirurgeria Magna*. The treasures in the library of the Royal Faculty of Physicians and Surgeons of Glasgow include a large number of books relating to medicine printed before the year 1600 and mostly in Latin. The Faculty possesses seven incunabula, and we may take Mr. Hurst's word for it that most of them are beautiful and interesting specimens of the art of printing. He gives the titles of these early printed works, bearing dates between 1472 and 1496; they include a copy of the first edition of the *Lilium Medicinae*, by Bernard de Gordon, whom we remember Dr. Fielding Garrison describes as "inferentially a Scotchman." Besides the incunabula, this library contains a fine specimen of the first edition of Vesalius, a number of books relating to the school of Salerno, and a fine first edition of Sir Thomas Browne's *Pseudodoxia Epidemica*. Here also may be seen the gauntlet gloves of Maister Peter Lowe, founder of the Faculty, together with other interesting relics, such as the manuscript clinical lectures of William Cullen, the case of instruments used on board the *Victory* at the battle of Trafalgar, and some mementoes of Lister in Glasgow.

THE FUND FOR RUSSIAN DOCTORS.

WE were able to announce last week that substantial progress had been made with the fund instituted by the Council of the British Medical Association for the relief of medical men and their families who are starving in various parts of Russia. The appeal, signed by the four Officers of the Association, has been sent to every member in Great Britain and Ireland, and its text was reproduced in our issue of July 1st at page 26. The appeal is for the only form of aid which in the circumstances can be effective—namely, the sending of food parcels through the American Relief Administration to individual medical men and to groups for distribution among members in greatest need. In order to secure a prompt and widespread response the Council has asked every member to send a contribution of 5s. to the Financial Secretary of the Association, 429, Strand, W.C.2, who will send a receipt. Nine subscriptions of 5s. each will more than cover the cost of one food parcel, including all charges, and the American Relief Administration in London has undertaken responsibility for its delivery to the person addressed. The following extracts from a statement by the Medical Director of the American Relief Administration will give an idea of the urgency of the need and of the means adopted to distribute relief: "I know of no class in Russia (he writes) more deserving of our admiration and assistance than the medical profession—doctors, nurses, feldshers, and assistants. A large percentage have died during the last three years from epidemic diseases to which they have been constantly exposed. . . . Undernourished and overworked, assuming the labours of their comrades who have succumbed, their weakened physical condition makes them a ready prey to infections, and their mortality rates are out of proportion to those prevailing generally. The mortality rate among physicians from typhus is reported 50 per cent., as against 15 per cent. for the general population. Though the local government nominally supplies rations for the personnel, actually doctors and nurses have to content themselves with what the patients leave on their plates. Very often even the patients' food is not forthcoming. Even when it is, it is meagre to the last degree. . . . Group relief as a means of reaching the artistic and professional classes, the most uncomplaining but by no means the least affected of Russian famine sufferers, takes the form of food packages which are distributed by the American Relief Administration in accordance with an approved plan. The method of selecting the most needy is the same for the cities and the provinces." After giving a detailed account of the method the administrator continues: "Three thousand packages have been distributed in this way to doctors alone in nineteen Russian cities. Each package contains 118 lb. of nourishing staples—white flour 50 lb., rice 25 lb., milk 20 tins, cooking fats 10 lb., sugar 10 lb., tea 3 lb. . . . Central warehouses from which American Relief Administration food packages are delivered to beneficiaries either in person or by mail are open at the following cities: Ekaterinoslav, Gomel, Kazan, Kharkov, Kiev, Minsk, Moscow, Odessa, Orenburg, Petrograd, Rostov-on-Don, Samara, Saratov, Simbirsk, Tzaritzin, Ufa, Simferopol, and Vitebsk." A recent message from Moscow states that famished Russian doctors are almost as hungry for modern medical literature as for food. Requests for English and American medical journals are constantly pouring into the Medical Director's office, and these, he says, are as urgently pressed as the application for food packages—in some cases even more urgently. Any British or American physician, he adds, who has files of medical journals for the past three years to dispose of could confer no greater boon upon the medical fraternity of Russia than to turn them over to the American Relief Administration for distribution. Many of the Russian doctors have not seen a medical journal from the outside world for years. They read them avidly and treasure any copy that chances to fall into their hands. Many touching messages of gratitude for the gift of food packages have been received by the American Relief Administration from members of the medical profession in Russia, and the evidence from various quarters amply confirms the Council of the British Medical Association in the steps it has taken to bring the plight of the Russian profession before their colleagues in this country. The amount of money received by the Financial Secretary up to July 10th was £1,253. The Council purposely suggested a small subscription, but many members have sent larger sums, and these have been gratefully received.

"LE CADUCÉE."

WE have more than once mentioned *Le Caducée*, by Baron Henri de Rothschild, M.D., of Paris, who now writes for the stage under the pseudonym of "André Pascal." A gala performance of this play was given at the Théâtre du Gymnase during the second International Congress of the History of

Medicine held in Paris last summer. It has now been adapted for the English stage by J. G. Levy under the title *The Risk*, and the first performance took place on the evening of July 5th at the Strand Theatre, with Mr. Arthur Bourchier in the part of Armand Revard, a medical blackguard whose unprofessional conduct forms the leading motive of the play. Two of the other doctors, Charrier and Professor Godefroy, are models of upright behaviour, and the professor is uncompromising on medical ethics. The fourth medical character, who is chief assistant in Revard's private nursing hell at St. Cloud, seems to have been a long time making up his mind, but in the end revolts against the scandalous goings on there, which include the performance of unnecessary operations upon rich patients, and the admission of actresses and reporters to the operating theatre. The whole story is disagreeable; without entering into details it may be summed up as the tragedy of a charlatan. We may be grateful to the translator for making no attempt to give the play an English setting, and a glance at the French text suggests that he has kept fairly close to the original version. The character of Revard is so grotesquely overdrawn that we doubt whether an English audience would suppose that such things occur even in a foreign country, and having now seen the play we can well imagine that our colleagues in Paris take the same view. Moreover, the irreproachable sentiments of the other doctors may perhaps be looked upon as something of an antidote to the infamous words and deeds of the "hero." The first-night audience seemed pleased with the actors, and possibly also with the play; but we scarcely think *Le Caducée* will affect the attitude of the public towards the medical profession in this or any other country. It may be well to add that fee-splitting (or dichotomy) is but one of Revard's many low tricks, and is only mentioned by him to be repudiated by his colleague; English playgoers should therefore not get the impression that this is a common practice either in France or in England.

THE WEST INDIES REPORT.

THE report of the Parliamentary Under-Secretary of State for the Colonies on his recent tour in the West Indies and British Guiana contains certain proposals for immediate improvement in the remuneration and general conditions of medical service in the Leeward and Windward Islands. The more important of these are summarized elsewhere (SUPPLEMENT, p. 22). It is therefore sufficient to remark in passing that they are long overdue, and that any delay in their adoption, whether by the Colonial Governments or the Colonial Office, will be a very grave error on the part of those responsible. The interest of the report is not confined to these concessions. In the first place its occasion is significant. For this tour marks a deliberate and successful attempt to establish a more vital relation between the Colonies and those ultimately responsible in this country for their administration. It is therefore a precedent of no small importance. It is also in itself a document of value in helping to an appreciation of the general circumstances determining the form taken by public health problems in the West Indies. The particular section which deals specifically with public health and medical services must be read in connexion with the sections covering respectively constitutional, economic, and educational conditions and certain problems peculiar to individual colonies, if it is to be fully understood. Public health conditions are characterized with considerable moderation as "not yet satisfactory." Whilst yellow fever has been eliminated by effective quarantine administration, malaria, dysentery, ankylostomiasis, yaws, typhoid, tuberculosis, and venereal diseases are prevalent, and combine to produce a deplorably high mortality rate. A lax standard of sexual morality and high incidence of illegitimacy, together with general ignorance and apathy in public health matters, tend to minimize the effects of the pioneer work done by the Rockefeller Institute, the local Baby Saving Leagues, the West Indian Conference, and the visit of Dr. Wright and Dr. Fairfield on behalf of the National Council for Combating Venereal Diseases. Mr. Wood rightly finds the key to the situation in the establishment of adequate medical and sanitary services, education of the public in the principles of hygiene and sanitation, and the stimulation of private effort. He emphasizes the necessity of making the conditions of appointment such as will in the first place attract competent candidates to the service, and, in the second, place adequate financial resources at their disposal in carrying out their duties. To this end he accepts the creation of a unified service as the ultimate solution of the first part of the problem; his solution of the second part must be deduced from other sections of his report. For education in hygiene and the stimulation of individual effort depend, after all, upon the general level of education, and can hardly be achieved whilst the majority of the population are illiterate, and the schools themselves present rather a warning than an example in the matter of sanitation. Moreover, it is unlikely that a sound appreciation of the relationship between individual and communal responsibility in public health questions will be secured until the constitutional problem of representative government has been solved. Meanwhile the public health and sanitary services cannot escape the adverse effects of the present acute economic depression. The improvement of economic conditions and the progressive influence of education will remove all obstacles from the path to an effective unified service, for there still remain geographical and political difficulties which are at present sufficient to remove political federation from the field of practical politics. Among the merits of the present report are that the immediate readjustments it recommends do in the main tend to make the way easier for the more radical reconstruction which is throughout recognized as necessary; that it proposes to give effect to the scheme for a unified medical service drawn up by Dr. K. S. Wise, Surgeon General of Trinidad, by an agreement similar to the West Indian Inter-Colonial Quarantine Convention, which could be adopted by two or more colonies as conditions become favourable; and that it does not presuppose a closer political relation than at present between the several colonies. Whilst the analysis of cause and effect contained in the section on public health is, in the main, convincing, there is one omission which calls for notice. It is nowhere specifically laid down that the Public Health Services are, as the Egerton Committee on the Colonial Medical Services pointed out, emphatically productive services. This point is the more important because it is apt to be overlooked, and those responsible for the utilization of the slender financial resources of the West Indies at the present time will do well to remember that successful economic development is in a very real and direct sense dependent upon a sound public health policy.

COMPARATIVE UROLOGY.

EACH of the many different departments into which the art of healing has become split works along its own lines, and too often independently of its neighbours. An advance in any one department of science may be unknown to workers in another, and valuable knowledge having a definite bearing on problems other than that to which it was originally applied may thereby be lost. For this reason any attempt to correlate knowledge gained in the different departments of science is to be welcomed. The Section of Urology of the Royal Society of Medicine has recently shown great activity in this direction. Not only have physicians and surgeons found there a common meeting ground, but the Section has also arranged discussions at which veterinary surgeons could give an account of those diseases that are common to man and the lower animals. At the May meeting of the Section Professor Hobday, of the Royal College of Veterinary Surgeons, read a paper on urinary calculi in domestic animals, and in the discussion that followed the paper more than one speaker drew attention to the fact that the etiology of urinary calculi was but one of the many problems that

were common to practitioners in human and veterinary medicine alike. At the June meeting of the Section veterinary urology gave place to what may be termed comparative urology. Mr. Kenneth Walker read a paper on the comparative anatomy of the accessory sexual glands, reported elsewhere (p. 84). As he explained in his preamble, this excursion of a surgeon into comparative anatomy had been made with a definite object in view—that of ascertaining whether comparative anatomy could throw any light on the difficult question of function. He asked, Would a consideration of the development and structure of the prostate in various animals furnish a clue to its purpose? It was in the hope of finding such a clue that Mr. Kenneth Walker had examined a large number of animals, and had studied the relative development of the various accessory sexual glands in a great many different species. Medicine can afford to neglect no line of study in the search for knowledge. The study of comparative anatomy has, in the past, yielded results of immense value, not only to that particular department of science, but to medicine and surgery in general. Indeed, one has only to turn to the writings of the great John Hunter to realize to what an extent medicine has become indebted to researches carried out in the field of comparative anatomy.

DISCOURTESY IN THE CORONER'S COURT.

We have repeatedly had occasion in these columns to call attention to irregularities committed by coroners and to the discourtesy displayed by some of them to medical witnesses. A recent case at New Brighton furnishes a further example of this attitude. The facts of the case are as follows: An unmarried maidservant in a private house gave birth to a child, which she placed in a bath under the bed. Her condition had not been suspected by her master and mistress, and the birth was only discovered because the woman was unable to carry on her duties. Dr. Barry was called in and certified the child as stillborn, and also gave a certificate for the removal of the woman to the infirmary, to which she was transferred in an ambulance during the day. Subsequently, it occurred to Dr. Barry that he should not have given a certificate in the case of an illegitimate child. Accordingly, he informed the coroner of what he had done, and an inquest was held. A verdict of stillbirth was found. During the course of the proceedings the coroner made some severe strictures on the removal of the mother from the house, and, referring to Dr. Barry's certificate that she was fit to be removed, remarked that he could only say that if complications followed the removal of a woman in a case like this he would advise the jury that he (Dr. Barry), as the medical man responsible for the removal, would be guilty of manslaughter. Several comments may be made on this case. In the first place, Dr. Barry need not have informed the coroner of the circumstances at all. The law does not require either a certificate of death or an inquest in the case of the stillborn child. In order to obtain burial all that is necessary is that the superintendent of the cemetery, or other person who has control over the burial, should be furnished with a certificate, to the effect that the child was stillborn, from the practitioner who was in attendance at the birth or who had examined the body. The position is not altered by the fact that the birth is illegitimate. In any case there is no statutory obligation upon a medical practitioner to give information to the coroner of a death under circumstances necessitating an inquest. The medical practitioner dealing with such a death may refuse to give a certificate, and even acts in strict conformity with the terms of the law if he gives a certificate stating the cause of death, even if due to violent or unnatural causes. In the first case the death would be reported to the coroner as an uncertified death, and in the second it would be the duty of the registrar to refer the certificate to the coroner as one relating to a death demanding an inquest. While, technically, either of these courses would be correct, the almost universally established custom is for the medical practitioner to give information direct to the coroner, and it is obvious that any other course might lead to serious delay and possible loss of important evidence bearing upon the cause of death. It is clearly in the interests of the community that medical practitioners should render all possible assistance to coroners. In the vast majority of cases they willingly do this, and give prompt information of any death which might require an inquest. Some coroners, however, either forget or are ignorant of the fact that information from the medical practitioner of a death is rendered solely as an act of courtesy. Such ill-mannered utterances as that made by the coroner for New Brighton seriously militate against harmonious co operation and are against the interests of the community, the medical profession, and the coroners. As regards the coroner's suggestion that the mother had been treated harshly, and even dangerously, we may point out that in this matter he was going entirely beyond his sphere, which was simply to inquire into the circumstances attending the death or stillbirth of the infant. The question as to whether or not the woman should have been allowed to remain in the house was one for decision by the master and mistress. They took the natural course of ascertaining from Dr. Barry that the woman was fit to be removed, and, in the absence of any evidence impugning the accuracy of Dr. Barry's opinion, the coroner's remarks were entirely unwarranted.

THE BRITISH ASSOCIATION.

THE British Association for the Advancement of Science, like the British Medical Association, is holding its ninetieth annual meeting this summer. The British Association will meet at Hull from September 6th to 13th, under the presidency of Professor Sir C. S. Sherrington, G.B.E., President of the Royal Society, who will deliver the inaugural address on "Some aspects of animal mechanism." The brief preliminary programme, just issued, gives the titles of the sectional addresses and a selection of the subjects put down for discussion in the various sections. Among the sectional addresses we may note that Principal J. C. Irvine will discuss research problems in the sugar group; Dr. E. J. Allen, the progression of life in the sea; Mr. H. J. F. Peake, the study of man; Professor E. P. Cathcart, the efficiency of man and the factors which influence it; Dr. Marion Newbigin, human geography, its first principles and some applications; Professor H. H. Dixon, the transport of organic substances in plants; and Dr. C. S. Myers will consider the influence of the late W. H. R. Rivers (President-elect of Section J) on the development of psychology in Great Britain. Other subjects for discussion include psycho-analysis and the school, mental characters and race, the present position of Darwinism, vitamins, economic periodicity, the possibility of increasing the food supply of Great Britain, and reforms in mathematical teaching. Professor W. Garstang will give an evening discourse on "Fishing: Old ways and new," and Dr. F. W. Aston on "The atoms of matter." Full particulars of the meeting may be obtained from the Secretary, British Association, Burlington House, London, W.1, or from the honorary local secretaries, British Association, Guildhall, Hull.

PROFESSIONAL CLASSES AID COUNCIL.

THE Professional Classes War Relief Council has been reconstituted as the Professional Classes Aid Council, and as such held its annual meeting, under the chairmanship of Lord Phillimore, on July 5th. Major Leonard Darwin, chairman of the executive, said that the decision to continue the work of the Council in peace time was due to the fact that distress still prevailed among large numbers of well-educated people. It was true that most professions had their own benevolent funds, but the Council served a useful purpose in referring many applicants, especially widows, to those sources, of which they had been unaware, and in helping others who were not eligible to benefit from the professional fund. All relief given by the Council was constructive; often it took the form of the education of children. About 1,000 children of the professional

classes had been enabled to continue their education by its means. In other cases the Council arranged for a period of needed rest or gave assistance to a person training for a vocation. There were not sufficient funds to give pensions in any cases. The Secretary of the Council reported that, in addition to those who continued to receive help, 327 fresh applicants had been advised, and 87 others assisted materially, during the past year. Co-operation was maintained with thirty-eight societies, including the British Medical Association and the Royal Medical Benevolent Fund. The work had its pathetic, but also its lighter side, as, for instance, the case of the widow who was asked whether her husband had been a Freemason, and replied indignantly, "Always the loving and faithful companion of his wife!" Speakers representing various professions testified to the timeliness of the help given to some of their unfortunate colleagues. The address of the Council is 251, Brompton Road, S.W.3.

TENTH INTERNATIONAL CONGRESS OF OTOLOGY.

THE tenth International Congress of Otology, the first to be held since 1912, will be held in Paris next week. It will continue from July 18th to 21st. One sitting will be devoted entirely to a laryngeal subject, and the choice has fallen on the treatment of cancer of the larynx. The social attractions of the gathering appear to be more than usually alluring. They begin with a reception at the Hôtel de Ville on the afternoon of July 18th. There will be another reception on July 19th, a banquet on July 20th, and a day's trip to Verdun on July 22nd. A very large number of British and overseas oto-laryngologists have already inscribed themselves. Further particulars can be obtained from the Secretary of the English committee, Mr. Lionel Colledge, 22, Queen Anne Street, London, W.1, or applications may be sent to the Secretary-General, Dr. A. Hautant, 28, rue Marbeuf, Paris (VIII).

COMMITTEE ON CRIME AND INSANITY.

THE Lord Chancellor has appointed a committee to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and whether any, and if so what, changes should be made in the existing law and practice in respect of cases falling within the provisions of Section 2, Subsection 4, of the Criminal Lunatics Act, 1884. The Chairman of the Committee is Lord Justice Atkin. The other members are Sir Ernest Pollock, K.C., M.P., Attorney-General; Sir Leslie Scott, K.C., M.P., Solicitor-General; Sir Herbert Stephen, Bt., Clerk of Assize for the Northern Circuit; Sir Richard Muir, Senior Treasury Counsel at the Central Criminal Court; Sir Archibald Bodkin, Director of Public Prosecutions; Sir Edward Troup, K.C.B., late Permanent Under-Secretary of State, Home Office; and Sir Ernley Blackwell, K.C.B., Assistant (Legal) Under-Secretary of State, Home Office. It will be observed that the Committee is a purely legal and administrative body.

THE PRACTICE OF DENTISTRY.

THE Registrar of the Dental Board of the United Kingdom informs us that a recommendation has been addressed to the Privy Council under Section 1 (4) of the Dentists Act, 1921, that this section shall come into operation on November 30th instead of at the expiration of one year from the commencement of the Act—namely, July 28th, 1922. It is expected that the decision of the Privy Council upon the matter will be announced very shortly. The section enacts that no person shall, unless registered in the *Dentists Register*, practise or hold himself out, whether directly or by implication, as practising or being prepared to practise dentistry. A person acting in contravention of this provision is, in respect of each offence, liable on summary conviction to a fine not exceeding £100. The section does not operate to prevent the practice of dentistry by a registered medical practitioner, or the extraction of a tooth by a duly registered pharmaceutical chemist, or duly registered chemist and druggist where the case is urgent and no registered medical practitioner or registered dentist is available and the operation is performed without any general or local anaesthetic. Nor does it prevent the performance in any public dental service of minor dental work by any person under the personal supervision of a registered dentist, and in accordance with conditions approved by the Minister of Health after consultation with the Dental Board set up by the Act.

A MEETING of the Physiological Society will be held at Glasgow on July 27th, morning and afternoon, in conjunction with the British Medical Association. The Section of Physiology of the British Medical Association will, on the morning of that day, hold a discussion on basal metabolism, to be opened by Professor E. P. Cathcart, F.R.S. In the afternoon there will be demonstrations in the Physiological Institute.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Colonial Medical Services.

IN the debate on the Colonial Office vote, on July 4th, Dr. Fremantle referred to the section of the Under-Secretary's report on the West Indies dealing with the Colonial Medical Services. An analysis of this report is published in the SUPPLEMENT at page 22, and some points it raises are discussed at page 99. Dr. Fremantle in his speech instanced the case of British Honduras as illustrating the evil results of the neglect of good advice. Seventeen years ago the late Sir Rupert Boyce had, as a result of a visit to British Honduras, described the extraordinary insanitary conditions existing and the prevalence of the stegomyia mosquito, involving the danger of outbreaks of yellow fever. Nothing was done, but outbreaks of yellow fever occurred, the most recent only last year. Dr. Fremantle then turned to the case of Mauritius. The Colonial Office, he said, had no staff of trained medical inspectors such as it ought to have, but last year sent out an unofficial inspector, who spent six months in the island and presented a long report; so far as Dr. Fremantle knew this had not been published, but it pointed out the various conditions dangerous to the public health, and advised the establishment of a proper water supply for Port Louis and the five towns; it also indicated that temporary measures to supply good drinking water could be provided at a cost of about £1,500. Nothing was done, and an epidemic of typhoid fever had since occurred. The Under-Secretary had commended the action of the National Council for Combating Venereal Diseases in sending out a commission. Last year a grant of £1,500 for the purpose was made, but this year it had been dropped. Dr. Fremantle observed that America did much more for the health services of her colonies, and the Rockefeller Foundation was doing magnificent work. The Colonial Office had sent out fourteen sanitary inspectors to Kenya and sixteen to the West Coast of Africa, but it had made no provision for training such inspectors; it depended on the one hand upon the Royal Sanitary Institute, which had done excellent colonial work for the last twenty-five years, and on the other upon the Rockefeller Foundation, which again had stepped in and made a noble gift. After speaking of the inadequacy of transport allowances, and of some other points not adequately dealt with, Dr. Fremantle said that the British Medical Association, which had done much to focus and to represent medical opinion on these subjects for many years, was grateful to the Under-Secretary for the instalment of improvement which he had brought forth. But it was only an instalment. A departmental committee on the Colonial Medical Service had reported in 1920, but nothing had yet been heard as to the action the Government proposed to take upon it. One or two little matters had been attended to, but no indication had been given as to the general policy to be adopted in regard to it. The Colonial Medical Service could not go on as at present. The condition affected recruiting and recruiting affected the whole service and other things in addition. There were certain obvious proposals which he had brought before the House last year. The first was that the Colonial Office required an Advisor-General. The report to which he had referred asked for a Director-General; the official reply was: "You cannot have a Director-General unless he has power to direct; these medical services belong to the Colonies and not to us, and it would not be easy for such a man to direct them from here." There were certain officers in authority for certain medical services

such as the West African, but an Advisor-General was wanted. The need was for some one man responsible for focusing the work and for training, and for advising the Colonial Office systematically. What he suggested was done in the army, the navy, and the India Office. A first step towards the adoption of the proposals of the departmental committee would be to have one, two, or perhaps three highly trained and highly experienced travelling medical inspectors to go to the colonies to study the conditions and to advise on the steps which should be taken to prevent epidemics. Expenditure on such measures would be economic, and would favourably affect the next generation. When America decided to take over a colony she swept it clean; health measures were deemed a matter of business. The result was that industry at once went to the places, knowing it could do so safely.

Medical Benefit.

Mr. Foot asked, on July 3rd, how many persons were insured under the National Health Insurance Act; how many of these had not selected a panel doctor; what amount of money in respect of such persons not attached to any panel was distributed annually among panel doctors; how many doctors participated in the distribution; and whether there were any statistics showing what work was done or what number of professional attendances were given by the participating doctors in return for the money so distributed.

Sir A. Mond said the number of insured persons in England and Wales entitled to medical benefit was estimated at approximately 13,250,000. The number of names on the lists of insurance practitioners and approved institutions was slightly over 12,800,000. The number of insured persons who had not selected a doctor was on this basis 450,000, or 3½ per cent., but in consequence of the difficulty of keeping any precise record of the movements of the insured population there was inevitably some inflation in the doctors' lists, and the actual number of unassigned persons naturally exceeded that figure. But the vast majority of unassigned persons were those who neglected to select a doctor until they were in need of treatment, and who then had a right to immediate treatment although not at the time on any doctor's list. Thus the panel practitioners collectively were at risk in respect of them. The number of insured persons who did not avail themselves of their right to medical benefit when they required treatment was believed to be a relatively insignificant and diminishing fraction. The remainder of the question was based upon a misapprehension. Under the agreement there was no such division of the practitioners' fund as Mr. Foot suggested. The total sum available in any area was based upon the total number of insured persons for whose treatment, irrespective of the numbers assigned or unassigned, the practitioners in the area were collectively responsible. The available statistics as to the work done by insurance practitioners did not distinguish between patients who were or were not on the list of a practitioner at the time treatment was given.

Criminal Law Amendment Bill.—On the Second Reading of this bill on July 5th, Mr. Shortt explained that in 1918 two Criminal Law Amendment Bills were referred to a Joint Select Committee of both Houses of Parliament, but the dissolution came before the Committee had reported. In 1920 the Committee was again constituted under the same chairman (Lord Muir Mackenzie) and made a report. Last year a bill, on the lines of its recommendations, passed the Lords, and was read a second time in the Commons, but unfortunately the two Houses disagreed as to certain amendments, and there was not time for a settlement before the end of the session. The Government thought it right this year to take up the bill. There was very little in the provisions which had not been debated thoroughly on previous occasions. Clause I dealt with the age of consent for indecent assault. The Government had come to the conclusion that the age should be made 16, the same as for consent for carnal knowledge. There were various other provisions, such as an increase in the punishment for keeping brothels, but most of these were entirely non-contentious. The main controversy had been over the subject-matter of Clause II, which provided that reasonable cause to believe that the girl in question was over 16 should no longer be a defence. A large body of opinion was in favour of the provision as it stood in the bill, but another body of opinion was that to take away that defence was unfair; but he believed that this body was, comparatively speaking, a small minority. Negotiations had taken place to exempt from this provision young men who might be tempted by girls more to blame than they were. Those very strongly in favour of the clause were willing to agree to some such exemption as this—that where the accused person was under a certain age, say 21 or 23, or whatever age might be agreed upon, a magistrate might instead of committing the man for trial, treat the case under the Summary Jurisdiction Act, and merely bind him over. That was not satisfactory to those who held that a young man under the specified age should still have open to him the defence that he was not guilty of a crime at all. The binding over being under the Probation Act, there need be no conviction. Mr. Shortt concluded by urging that what should be done for young men was a question for committee. The discussion which followed raised no particular medical considerations. Major C. Lowther moved and Lieut.-Colonel Moore-Brabazon seconded the rejection of the measure. Other critics included Major Sir George Hamilton, Mr. Dennis Herbert, Mr. Kidd, Mr. Hohler, Mr. J. F. Green, and Mr. Macquisten; they spoke for the most part as to the possible danger that young men might be wronged by designing girls or blackmailers. Sir Donald Maclean, Mr. Wignall, Sir Arthur Steel-Maitland, Mrs. Wintringham, Lieut.-Colonel Hurst, and Sir Thomas Bramsdon spoke in favour of the bill, with the qualification proposed by Mr. Shortt. Ultimately the second reading was given without division and the bill referred to Grand Committee.

Statistics of Old-Age Pensions and Poor Law Relief.—According to a voluminous statement furnished by Sir John Baird, the total amount paid in old-age pensions during the year ended March, 1922, was approximately £26,009,500 (excluding Northern Ireland). The total number of old-age pensioners on the last Friday in March was 1,029,367, of whom 365,255 were men and 663,112 were women. The total number of persons of all ages in England and Wales receiving institutional relief was 222,268; the total number receiving domiciliary relief was 1,183,516. The number of persons over 70 years of age in institutions (other than lunatic asylums) was 42,695; the number receiving domiciliary relief was 21,278. The number of old-age pensioners receiving institutional relief was 3,190; the number receiving domiciliary relief was 19,084. The average weekly cost of Poor Law relief in England and Wales in the financial year 1920–21 was approximately per person: indoor (other than relief to lunatics in lunatic asylums), 35s. 6¼d.; outdoor, 7s. 7¾d. In Scotland the total number of sane poor in poorhouses, on May 15th, was 10,407. As regards outdoor relief the numbers were: ordinary, 71,886; destitute able unemployed, 1,478. These figures excluded the insane. The average weekly cost of sane paupers and dependants in Scotland for 1920–21, on the basis of the number chargeable other than destitute able-bodied, on May 15th, was: indoor, £1 7s. 6d.; outdoor, 7s. These average costs were exclusive of general administrative charges. The number of sane paupers and dependants in Scotland over 70 years of age on January 15th was: in poorhouses, 2,395; outdoor, 4,126. The outdoor poor included 2,931 old-age pensioners. The average weekly cost of prisoners in England and Wales for the financial year 1920–21 was as follows: convicts, gross cost £3 3s. 9d. per week; net cost, after deducting value of labour and incidental receipts, £2 9s. 7d.; local prisoners, gross costs £2 2s. 4d.; net cost (after deductions as above) £1 12s. 6d.

Conditions in Mines.—In the debate on the Mines Department vote on July 6th Mr. Robertson, who formally moved a reduction on the sum, said that for the year 1920 (the last for which there was a full return) the fatal accidents numbered 1,103 and the non-fatal 117,000. These figures took no account of injuries to men not off duty seven days. Taking the rate according to the tons of mineral raised per man the accident rate for 1920 was as high as in any period of ten years since 1883. The great causes were falls from roofs and sides and haulage—not fire-damp. Mr. Cape, seconding, referred to nystagmus as a disease increasing considerably amongst the mining classes. A man having contracted it had little possibility of escaping from it for the rest of his life. It might be abated somewhat, but the recurrences which took place were serious, and in his own county he had known men who through the effects of the disease had had to be taken to the asylum. Mr. Bridgeman, Secretary to the Mines Department, said that questions of health and safety formed much the largest part of his work and the most interesting, and he thanked miners' representatives for giving him credit for good intentions. He differed from Mr. Robertson as to what were reliable comparative statistics as to accidents. He had had figures worked out which showed the death rate in the decade from 1873 to 1882 per million tons raised was 7.42; in 1903–12 it was 4.76, and in 1920, a year by itself, 4.60. He agreed, however, that in the last ten years there had been no big explosions. With regard to nystagmus Mr. Bridgeman quoted the report issued by the Medical Research Council of the Privy Council, whose main suggestion was that better light would probably have a good effect. On that the department had been carefully considering every possible means of improving the luminosity of lamps used by miners, and where it was possible to use electric lamps it was hoped to introduce them. He added that the Medical Research Council kept very closely in touch with his department on general questions. They had taken up with him the subject of weak hands and weak knees. Then there was the question of stone dust in the mines. He had a small standing committee of experts to which medical questions could be referred. That he thought a step in the right direction. The more they worked in harmony with the Medical Research Council the better pleased he should be. He was very grateful for the help they had given him so far. Mr. Bridgeman next touched upon the "Safety First" campaign undertaken in the mines. He had been astonished at the number of deaths which had occurred from tiny scratches—deaths which might have been avoided if first aid had been resorted to. After other speeches the amendment was withdrawn.

The Increase of Cancer.—Mr. Hurd asked, on July 10th, whether the Prime Minister was aware that many medical authorities had come to the conclusion that the alarming increase of cancer and similar diseases might, in part at least, be due to the increased consumption of tinned foods, chemically prepared, and largely of foreign origin; and whether he would submit the subject for investigation to a committee of independent experts who had no association with departments of State, and could view the problem without any preconceived ideas. Sir A. Mond said his answer to the first part of the question was in the negative, but he should be glad to consider any statements by medical authorities which Mr. Hurd could send him in support of the conclusion as to the increase of cancer and its association with the cause alleged. He was always prepared to consult experts other than those associated with his department, but as at present advised he did not think there was need for the appointment of a special committee to investigate this subject.

Zymotic Diseases and Cancer.—Mr. Lunn, on July 6th, asked for a return showing the death rate in the case of each of the zymotic diseases and also of cancer per million of the population for each decade since the registration of causes of death began in England, Wales, Scotland, and Ireland. Sir A. Mond said the desired information for each decennial period from 1851 to 1910 as regards England and Wales would be found in Table 10 of Part 3 of the Supplement to the 75th annual report of the Registrar-General, published in 1919. The figures for the last decennium, 1911 to 1920, had not yet been published, but the uncorrected death rates (per million living) during that period were as follows: small-pox 0, measles 275, scarlet fever 47, whooping-cough 184, diphtheria 141, enteric fever 35, diarrhoeal diseases 603, cancer 1,117. These rates were subject to revision. Questions as regards Scotland and Ireland should be addressed to the Secretary for Scotland and the Chief Secretary for Ireland.

Universities (Scotland) Bill.—Under the provision of the measure which came down from the House of Lords and was read a second time in the Commons on July 4th, the existing powers of the University Courts are to be enlarged. The universities are to be empowered, first, to pass ordinances imposing age limits upon the tenure of office of any principal or any professor in the university; secondly, to institute a new pensions scheme for principals or professors, in addition to or substitution for existing pensions schemes; and thirdly, to provide for the admission of lecturers or readers to the Senatus Academicus.

The Cost of Scientific Instruments.—Dr. Murray asked, on July 3rd, whether the attention of the President of the Board of Trade had been drawn to the statement in the last annual report of the Medical Research Council to the effect that its operation had been greatly hampered by the present high cost of scientific instruments and materials; and whether, in view of the fact that other eminent scientific workers had repeatedly stated that the Safeguarding of Industries Act was the chief factor in raising the cost of instruments and chemicals, the Minister would advise the Government in favour of repeal of the Act. Mr. Baldwin replied that the report containing the statement related to the year ended September 30th, 1921, when the Safeguarding of Industries Act was not in operation, and thus confirmed the view that the increased cost of research was not due mainly or even appreciably to that Act. Dr. Murray said the point of his question was that the Act had increased the already high cost of this material.

Exportation of Morphine.—Mr. Ramsden, on June 28th, drew the attention of the Home Secretary to a statement at a missionary conference in Derbyshire to the effect that sufficient morphine was being smuggled into China annually to give every man, woman, and child three injections, and that the sources of supplies were England, America, and Germany. Mr. Shortt said the export of morphine from this country was prohibited except under licence from the Home Office, and all possible steps were being taken to prevent its export for other than medical or scientific purposes. The traffic could only be successfully controlled, however, by international co-operation, and one means to that end would be the adoption and enforcement by all countries of the system of importation certificates recommended by the League of Nations. The Council of the League were urging the members of the League to bring the system into operation at an early date.

Suicides in Prison.—Replying to Lord Henry Cavendish-Bentinck on July 11th, Mr. Shortt said there was no doubt that among persons received into prison there was an abnormally high proportion prone to insanity and suicide, and before any comparison was made between the prison and the ordinary population this factor and many others must be taken into account. For example, the ratio among the prison population which consisted of persons over 16 years of age could not properly be compared for these purposes with the ratio among the ordinary population of all ages. Mr. Shortt described as "entirely misleading" Lord Henry Cavendish-Bentinck's statements that the suicide rate among prisoners was three times as high as among the ordinary population and the ratio of insanity five times higher than that of the ordinary population.

Condensed Milk.—Sir A. Mond, in reply to Mr. Hurd, on July 10th, said that the amount of condensed separated or skimmed milk imported during the first five months of this year was about 503,000 cwt. as compared with about 285,000 cwt. of condensed whole milk. The question of issuing regulations as to labelling was under consideration. He had no power to alter the present statutory requirement that condensed separated milk must be labelled as "machine-skimmed milk."

School Children's Attendance.—The Economy (Miscellaneous) Bill, which was read a second time on July 10th, includes a provision that no child need be sent to school before the age of six, but that if any parent desires to send his child to school at the age of five he shall still be entitled to do so. In the course of the debate, Mrs. Wintringham pointed out that one effect of the change would be that in the case of all the children effective medical inspection would be put off until six years of age, which would mean, in her opinion, that an extra year would have to be made up in the matter of health.

Short Notes.

Sir A. Mond has stated that the Quarantine Acts were repealed in 1896; the measures now adopted for preventing the introduction of infectious diseases into this country are based on the provisions of international conventions; no distinction is made between persons of British and foreign nationality.

The report stage of the Milk and Dairies Bill was reached in the House of Lords on July 10th, certain small amendments being made on the motion of the Earl of Onslow, who submitted them in redemption of promises.

The Minister of Health has stated that the regulation which precludes the Registrar-General from registering births after the age of 7 years will shortly be cancelled.

The Home Secretary has promised to consider a suggestion to inquire into prison administration and Borstal institutions, preferably by a Royal Commission.

MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the offices of the British Medical Association on Thursday, June 29th, when all the members were present—namely, Dr. G. E. Haslip (chairman), Dr. E. Weaver Adams, Sir John Bland-Sutton, Dr. Alfred Cox, Dr. H. A. Des Vœux, Lieut.-Colonel R. H. Elliot, I.M.S. (ret.), Dr. R. A. Gibbons, Dr. R. Langdon-Down, Dr. J. A. Macdonald, Sir Squire Sprigge, Mr. W. E. Warne, and Sir Dawson Williams.

The Chairman, Dr. G. E. HASLIP, in presenting the report, balance sheet, and accounts made up to December 31st, 1921, said he was glad to see that there was a full attendance, and felt sure that the committee would be equally pleased with the position of the Agency as disclosed by the accounts. The business had increased considerably during the year 1921, and its influence had thereby become the greater. The amount returned to medical men insuring through the Agency during the year was £1,697, making a total so returned since 1907 of £10,992. These rebates represented a direct and personal benefit to those insuring; the amounts so returned form a useful index to the progress of the Agency. During the first year of establishment the Agency made rebates of £140, during 1910 of £446, during 1915 of £838, and during 1920 of £1,453. It would, he continued, be remembered that the secondary purpose of the Medical Insurance Agency is to apply the balance of the commissions earned to the purpose of medical charities. The total amount distributed among the medical charities during the fifteen years of the Agency's existence was £8,412; the growing business of the Agency was thus also illustrated in the amounts so available. During the first three years it was not possible to make any distribution, during 1910 the sum of £47 5s. was voted, during 1915 the sum of £630, and during 1920 the sum of £1,015. Medical charities had benefited through the Agency during 1921 by no less a sum than £1,965.

Mr. FERRIS-SCOTT (Secretary of the Agency) reported that the business of the agency had been extended principally in life and motor car insurances. In life assurance the policies recommended by the Agency had been well taken up by members of the medical profession. New life policies were arranged during 1921 to secure sums amounting to £105,500, the total to December 31st thus amounting to £469,882. The progress of motor car insurance during 1921 had been most marked, and it would seem that the advantage of placing such insurances through the medium of the Agency was beginning to be more widely realized. Apart from the fact that by the giving of rebates the policies are obtained at a cheaper rate than could be secured if an insurer went direct to an office, it is in the equitable settlement of claims that the Agency is able to render valuable assistance to the insured.

The balance sheet and accounts were adopted unanimously, and the Committee of Management allocated out of the funds available further grants of 200 guineas each to the Royal Medical Benevolent Fund, the Royal Medical Benevolent Fund Guild, and the Epsom College Medical Foundation. These grants increase the total amount contributed by the Agency to medical charities to £9,030, and led to a proposal from Sir DAWSON WILLIAMS that further consideration should be given to the scope of allocation of available sums, particular attention being paid to the possibility of assisting in the education of the daughters of deceased practitioners, whose case was frequently more difficult and precarious than that of boys.

A resolution proposed by Dr. H. A. DES VŒUX, and seconded by Sir SQUIRE SPRIGGE, was adopted, that a small subcommittee should be formed with a wide reference to consider the matter and report to the Committee of Management in six months.

NINETIETH ANNUAL MEETING
of the
British Medical Association,
GLASGOW, 1922.

THE COAST AND COUNTRY AROUND GLASGOW.

OUR illustrated article last week on the Glasgow Medical School was the sixth of the series of descriptive and historical notes on the City and University of Glasgow and its medical institutions, which began in the BRITISH MEDICAL JOURNAL of December 3rd, 1921.* In last week's SUPPLEMENT we printed the full programme of the Annual Meeting, of which the scientific and social part opens on Tuesday, July 25th, and the medico-political part on the previous Friday.

The following article gives some account of the interesting places to be visited on the last day of the meeting, in accordance with the brief itinerary printed at page 13 of last week's SUPPLEMENT. The whole-day excursions are three in number: (1) The Firth of Clyde and Kyles of Bute; (2) the Land o' Burns; (3) Stirling, Bridge of Allan, and Dunblane.

Comprehensive plans have been made for these pleasure excursions that are to mark the close of the Annual Meeting in Glasgow. There was a fear that the date (Saturday, July 29th), being a time of heavy holiday traffic, might affect the obtaining of special facilities; but all obstacles have been surmounted, and as a result capital outings to centres of great interest have been arranged. Early application should be made to the Hon. Local General Secretary, 22, Sandyford Place, Glasgow, W.

THE ANNUAL MEETING EXCURSIONS.

A DAY ON THE CLYDE.

The magnificently appointed turbine steamer, the *Duchess of Argyll*, has been chartered for the Clyde trip, and in the course of a single day's sail visitors will see the best of the varied scenery that is the charm of the famous Firth. The route has been chosen with the idea of packing the greatest possible pleasure into the time available. An American, touring on the principle "one day here and the next day elsewhere," could wish for no better route on the estuary than that beginning at Gourock, where the Caledonian express from Glasgow Central Station draws up at the large embarkation pier. It is a route that leads westward past Loch Long, Strone Point, and the Holy Loch to Hunter's Quay, Kirn, Dunoon, and Innellan, the clean little townships and villages that fringe the Cowal Hills; takes a turn at Toward Point, in towards Rothesay, and onwards through the Kyles of Bute to Loch Fyne; passes the Island of Arran, with its proud peaks, rounding the Garroch Head and opening up a fresh vista, in which the Cumbrae Isles and the Ayrshire coast resorts come into prominence, as the voyage is continued to the Cloch Lighthouse and Gourock once again.

Photograph by] BRIG O' DOON. *[Annan, Glasgow.*

Such is, in brief, the Clyde trip itinerary. None finer could be enjoyed even in a week's sojourn, for it embraces part of all the popular tours—the best part, as those who know could tell. The rail journey to Gourock makes it possible to avoid the inevitably slower sail down the river, where of necessity the traffic has to be regulated, and where, in a measure, the shipbuilding industry has bestowed its legacy of grime and noise on a once beautiful sylvan environment. But it has been considered wise, nevertheless, to embark at the Broomielaw quay in the City, and an opportunity will thus be afforded of seeing the busy area that lines the banks of the Clyde westwards for many miles, and some idea of the industrial activities of the lower reaches will be gained from sight of the shipyards at Port Glasgow and Greenock and across the water, where, from Dumbarton Rock, the ancient Scottish stronghold, Dumbarton Castle, looks down on ships in the making on the stocks of Denny's yard.

Gourock, where passengers will disembark on the homeward journey, is of itself a charming town with fine residential villas terraced on its heights, a wide esplanade, an excellent kursaal and bathing pond, a compact little sporting golf course, and all the attributes of a popular seaside resort. Here the Royal Gourock Yacht Club has its headquarters, and there is harbourage for pleasure craft of all types known on the Firth, from the little cutters of the artisan sportsmen who race annually for the King's cup, to the 50-tonners of the no less keen, though affluent, enthusiasts; while the waterway is seldom without the presence of luxurious steam yachts that add so picturesque a touch to the scene.

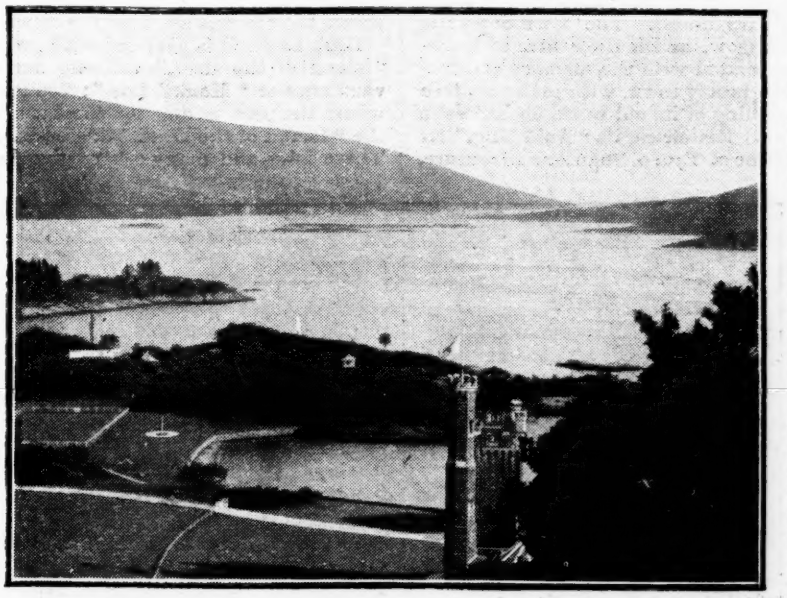
The Hills of Argyll.

Across the shining expanse of the Firth the hills of Argyllshire stand out against the horizon. In their rugged grandeur they are characteristic of the glorious scenery of the Scottish Highlands, and here, surely, it is to be found at its best. The jagged contours of the mountains overshadowing Loch Long and Loch Goil are known as "Argyll's Bowling Green," but history does not record who bestowed on them that facetious title. One of the most famous peaks in the range is "The Cobbler," so called because of the resemblance its formation

* The other articles of the series appeared in the JOURNAL of January 7th, 1922, p. 29, February 11th, p. 242, April 22nd, p. 649, and June 3rd, p. 883.

bears to a shoemaker working at his bench. The City of Glasgow owns a Highland estate in the territory adjacent to Loch Goil. It was the gift of Lord Rowallan, who for many years represented one of the Glasgow Parliamentary Divisions in the House of Commons. The estate combines in the activities it fosters a prosperous sheep farm and an extensive scheme of afforestation that is expected in due course to bring a handsome return to the civic purse.

Strone Point, past which the excursion route will lead, is the site of Dunselma, a mansion house associated with the memory of Mr. James Coats of Paisley, one of the family famous in the thread trade. The Holy Loch, across the entrance to which the voyage will be continued, owes its name to tradition. A cargo of soil (from the Holy Land, so it is said) destined to be laid on the foundation of Glasgow Cathedral fell short of that destiny. The vessel carrying it was wrecked here one stormy winter night, and all that was saved of the treasured earth was placed on the shore where Kilmun Church, the burial-place of the Argylls, was afterwards erected.

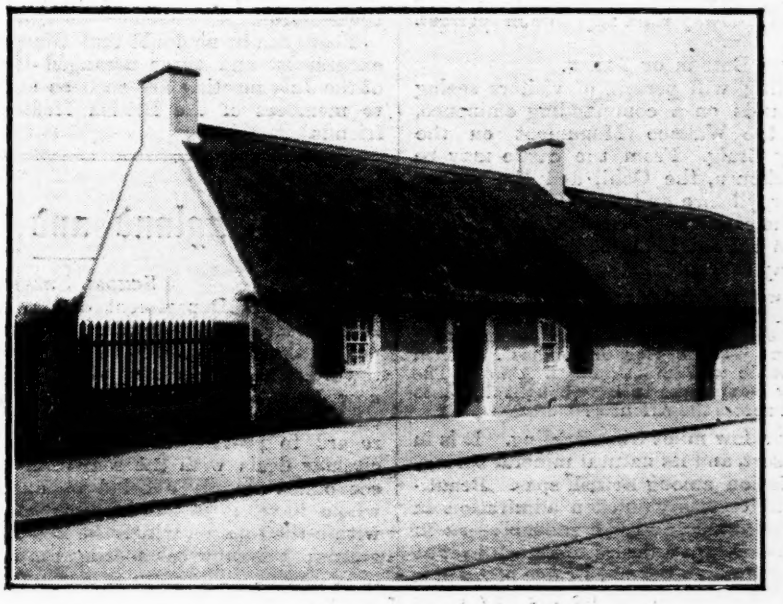


Photograph by] THE KYLES OF BUTE. *[Annan, Glasgow.*

Hunter's Quay, headquarters of the Royal Clyde Yacht Club, presents itself with an air of well-being; a little cluster of houses, gathered round the miniature pier, with the fine club-house and hotel standing apart in their own grounds. Kirn is just a little farther on, sharing with Dunoon beauty of situation and the patronage of many visitors who find there all the holiday joys that go to the making of memorable vacation days. Innellan, with its impressive hotel-hydro, is just such another pleasure haven, and from here all summer steamer tracks lead either to or from Rothesay Bay, where for description we may turn to the old song:

"It's a bonnie bay at morning,
And bonnier at the noon,
But bonniest when the sun draps,
And red comes up the moon,
When the mist creeps ower the Cumbraes,
And Arran peaks are grey,
And the great black hills, like sleeping kings,
Sit grand roun' Rothesay Bay."

Rothesay, with what may pardonably be termed its suburbs—Craigmore and Port Bannatyne—is known as "The Madeira of Scotland." Amid the green glory of trees are set the villas, boarding houses, and hydros, pleasure gardens and promenades that have won for it high regard in the estimation of holiday makers. The wide pier is ever the scene of gay bustle and activity. Steamers are continually arriving or departing, and during Glasgow Fair there is no centre on the Clyde that attracts such crowds. Yet Rothesay is not merely a holiday place. Its equable climate has gained for it a reputation as a restful, health-giving resort. To Rothesay Sheridan Knowles, the dramatist, and Edmund Kean, the actor, retired in their later days, and many aged folk and invalids have blessed the healing quality of its fine air. Glenburn Hydropathic, near Craigmore, was the first institution of its kind erected in Scotland. It was the happy thought of Dr. W. Paterson, a graduate of Glasgow University, who had studied hydropathy in Germany under Priestnitz.



Photograph by] THE COTTAGE WHERE BURNS WAS BORN AT ALLOWAY. *[Annan, Glasgow.*

The Kyles of Bute: Arran.

Description of the Kyles of Bute may be left for the individual fancy to fill in, but the surprises that await visitors there may surely be remarked upon. Passing the little village of Colintraive entry is made to a seemingly land-locked lake from which there is apparently no exit ahead. Suddenly, however, steering through a maze of little green isles, a choice of two exits is offered—to the right Loch Ridden, and, to the left the channel leading to Tighnabrüaich. The route, on this occasion, is the former, and after going a short turn up Loch Ridden the course leading to the left will be followed, and the two quaintly painted rocks, known as "The Maids of Bute," will no doubt be duly noted. Beyond Tighnabrüaich—which English visitors will find just as attractive as it is difficult to name—the Kyles are left at Ardlamont Point, the scene of a tragedy that culminated in the Monson case, a Scottish murder trial without parallel in the annals of the country.

If, as the poet has maintained, "there is a rapture on the lonely shore," it will assuredly be experienced when Arran comes into view. (A brief note of the Isle of Arran was included in the article on Glasgow and its neighbourhood printed in the JOURNAL of April 2nd, p. 649.) The island with its mountain grandeur, its glens and moorlands, haunt of the wild deer and grouse, its shepherds' cots and little farms, green wooded and sandy shores, is among the wonder pictures of the Clyde.

Corrie and Glen Sannox, Brodick and Glen Rosa, Goatfell, the highest peak in the mountain range, Lamlash and the Holy Isle—of these much might be written and the true estimate of the island's appeal be still far from complete.

Of the charms of the Isle of Arran a dreamer has sung:

"I dream't I saw the Arran hills again,
Heather, green woods, waves breaking on the shore;
An old farm kitchen with a grey stone floor;
The cattle in the fields, the stacks of peat;
Bracken, and bramble blossom, O how sweet. . . .
I saw the fishers hauling in their 'take'—
The water drip like silver in the sun—
A steamer, with the seabirds in her wake,
And then came friends . . ."

If the day be clear a glimpse may be had of the Ailsa Craig,

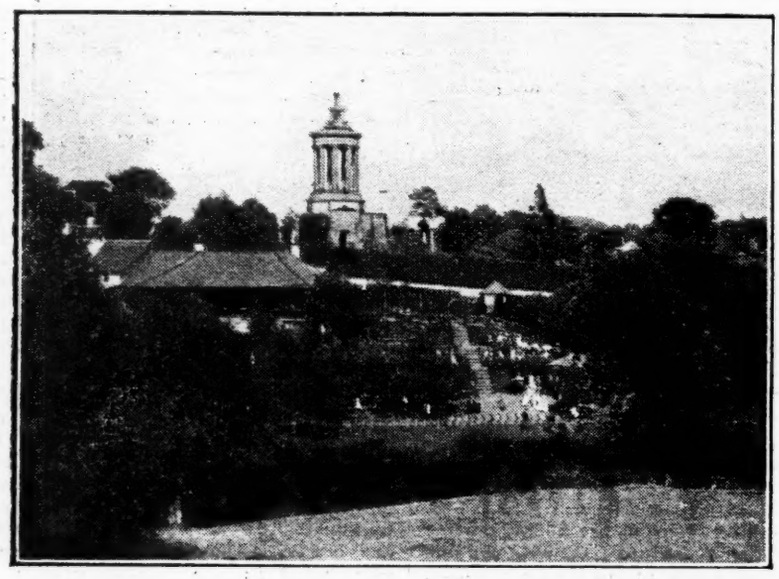
to the south, as the course is set for the Cumbrae Isles and the homeward run. Skirting the Ayrshire coast, with Saltcoats and Largs in the offing, Wemyss Bay and Skelmorlie will come into view, then Inverkip and the Cloch Lighthouse, with Gourock ahead and the express train in waiting to take the company back to Glasgow.

BURNS'S BIRTHPLACE.

To those who journey to Ayr for the tour through the Land o' Burns there will be pleasure indeed. The town of Ayr is within easy distance of Glasgow, and is the centre of a district that will ever be associated with the memory of Scotland's National Bard. It is a pretty town, with many modern features, yet retaining something of its old-world character in its buildings, its old-fashioned hostelries, its "Auld Brig," its haunted kirk at Alloway, scene of Tam o' Shanter's adventure, and the cottage where Robert Burns was born.

The cottage is now a national museum, housing relics of the past, and looked after by a trust under whose care it has been preserved. Near the cottage there are the Burns Monument and gardens, also the Brig o' Doon that spans the river that inspired one of the poet's finest songs.

Ayr and Alloway do not constitute the entire Land o' Burns, nor do they exhaust the programme for the day. Opportunity will be taken to visit Mauchline and the Burns Memorial there, while after lunch the party will proceed to Maybole, via Culroy, visiting Crossraguel Abbey and Kirkoswald, and the return journey will be made by Culzean Castle and the Heads of Ayr. Ayrshire itself and Dumfries have many memories of Burns's life and work, but Ayr and Alloway rank supreme in interest.



Photograph by] BURNS MONUMENT, AYR. *[Annan, Glasgow.*

STIRLING AND BRIDGE OF ALLAN.

The excursion to Stirling will permit of visitors seeing Stirling Castle, which stands on a commanding eminence, across from which is the Wallace Monument on the wooded heights of Abbey Craig. From the castle may be seen the field of Bannockburn, the Ochil and the Sidlaw Hills, the mountains of Argyllshire and the west, and to the north the Grampians. The castle may be said to be "steeped in tradition." It was the ancient home of the Stuarts—the one-time centre of their gay court.

"We lingered," says a writer describing the old keep, "in the Palace, the Parliament House, the Chapel Royal, and shivered a little when we were shown the Douglas Room, where one of the Jameses murdered William, Earl of Douglas . . . then went with an American couple to Cambuskenneth Abbey. The Americans looked as if they would like to have bought the place and had it packed for transit across the Atlantic!"

Bridge of Allan is only a few miles from Stirling. It is in high favour as a health resort, and its natural mineral springs have gained for it a reputation among British spas. Beautifully situated, the town will certainly quicken admiration in those who make its acquaintance, and will probably—as in most cases it is wont to do—prompt a desire to return to it at the earliest possible opportunity. Beyond Bridge of Allan is Dunblane with its famous Cathedral, and on the way there a visit will be paid to the celebrated Gardens of Keir by permission of the proprietor, General Stirling. The return journey will be by the Wharry Glen, close to the battlefield of Sheriffmuir.

Loch Lomond and the Trossachs.

Loch Lomond—which may be taken either as the beginning or the end of the Trossachs tour, via Loch Katrine, Loch Achray, Loch Vennacher and either Callander or Aberfoyle—has had its praises sung the world over. It may be viewed from—but the task of tabulating the many and varied prospects of loch, mountain, and glen were too great to attempt here. The truth is that wherever on the shores or on the waters of "The Queen of Scottish Lakes" a dream of natural beauty unspoiled spreads before the eyes. There are miles of sequestered seclusion between Balloch and Ardlui at the head of the loch, and fresh charm at every stage of the pleasure steamer's journey to Balmaha, Tarbet, Luss, Rowardennan, at the foot of Ben Lomond, and Inversnaid, where the coaches start for the drive through the Trossachs.

Loch Lomond is gemmed with green isles—Inchlonaig, the "island of the deer," with its fine old yew trees; Inchtavannich, the "Monks' Isle"; Inchconnachan, or Inchmoan, where the peat is dug for the farm fires; and Inchcailloch, the "Island of the Dead," the burialplace of the Macgregors. These isles and many others give Loch Lomond its unique character.

It has been said that possibly Scotland owes one half of its reputation for fine scenery to the Trossachs, and while not included in any of the excursions doubtless many visitors will extend their stay and find their way thither. Sir Walter Scott has enshrined the sum of its beauty in romance, and few there are who are not familiar with *Rob Roy* and *The Lady of the Lake*. Of the glories of Loch Katrine with its "low stir of leaves and dip of oars and lapsing waves on quiet shores" one need not write. Tourists who visit Scotland from year to year find that the praise lavished on the Trossachs has not been pitched in too high a key—as visitors to the Annual Meeting who journey to these parts will discover for themselves.

There can be no doubt that Glasgow is ideally situated for excursions, and those arranged for the concluding period of the July meeting are such as should make strong appeal to members of the British Medical Association and their friends.

England and Wales.

SCHOOL SERVICES.

THE Medical Department of the Board of Education has issued a circular to education authorities stating that the sum put at the disposal of the Board by Parliament for grants towards the six special services of elementary education have now been compared with the detailed estimates of local education authorities. The Board issued a circular with regard to provisional meals a short time ago; the present circular deals with the remaining five services. The large economies already effected by authorities themselves as a whole have, it is stated, brought the aggregate estimates within the total on which the Board is in a position to make grants; it is now considering each authority's proposals on their merits. The circular continues as follows:

School Medical Service.

"In the case of the School Medical Service, the Board's scrutiny of the authority's proposals will be directed mainly to seeing that the arrangements are in themselves efficient and economical, and that the total expenditure in each area is reasonable and appropriate. While, however, the Board will not be able to approve arrangements which in their opinion are extravagant and unnecessary in existing circumstances, it should be understood also that they will not be able to accept proposals which reduce or leave the authority's arrangements for their essential services below a reasonable level of efficiency in respect of their scope or the maintaining of efficient administration."

Special School.

"The Board are glad to find that it will be possible to allow existing schools for blind and deaf children to be used to the full extent of their accommodation. No restrictions therefore need be placed on the number of children sent to these schools by individual authorities, as the aggregate expenditure is not affected by the locality from which the children come, and the Board wish to leave the system as elastic as possible. The Board will extend the same arrangement to schools for cripple children, to open-air schools, and to schools for mentally defective children. The only special schools, in fact, to which the Board cannot at present agree to apply this arrangement are the sanatorium schools for tuberculous children, and they must ask authorities to restrict their expenditure in 1922-23 on this type of child to the level of their expenditure in 1921-22. The Board, however, will be prepared to consider on their merits cases in which the circumstances are abnormal and give rise to peculiar difficulties."

Organization of Physical Training.

"This is a relatively new service, which is still in an early stage of growth. But even a short experience has been sufficient to show the great value of the service, and the Board would view its curtailment or the restriction of its gradual development with great regret. The cost of this service is so small that authorities, when exploring all possible sources of economy in the cost of elementary education, may well give very careful attention to its special claims. The Board's own view is that this service adds so greatly to the value of the work of the schools and, from the point of view of the child's health, is so potent an auxiliary in the prevention of debility and disease that projected savings on this service might reasonably be postponed till the possibilities of alternative savings on other special services or on ordinary services have been fully tested."

The Board intends very shortly to issue a circular with regard to the organization of physical training.

As to nursery schools it is said that the Board will not, as a rule, be able to approve the establishment of new schools.

In conclusion, the Board states that its scrutiny of the separate special services necessitated by the demand for strict economy has shown the need for a general review of these services and for the introduction of more system and balance into the work as a whole. To this end the Board proposes shortly to issue some suggestions to authorities.

CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales met on June 28th, the chairman, Sir Francis Champneys, presiding. The Penal Board did not sit, as only one case was cited, and the solicitor was unable to obtain the necessary evidence in time. At the ordinary monthly meeting a letter was read giving the Minister of Health's approval to the rules as they now stand for a further period of one year from July 1st. Among the matters considered by the Standing Committee was a letter from the Ministry of Health stating that the Minister notes that only the question of opium was dealt with in the memorandum recently prepared by the Board on the administration of drugs by midwives, and asking to be furnished with the observations of the Board on the use of pituitrin by midwives. The chairman drafted a reply, which was approved. A resolution was received from the Maternity and Child Welfare Subcommittee of the Manchester City Council regarding the administration of opium by midwives, and expressing the opinion that this was a dangerous practice, but the Board decided to take no action.

The Board recorded its deep sympathy with the relatives of the late Dr. Gordon Ley, and its appreciation of his valuable services as an examiner at the London centre.

Scotland.

EDINBURGH ROYAL INFIRMARY.

DR. W. T. RITCHIE, lecturer on clinical medicine in the University of Edinburgh and assistant physician to the Royal Infirmary, has been appointed physician; Mr. J. N. Jackson Hartley, F.R.C.S.Edin. and Eng., M.B., Ch.B., assistant to the professor of clinical surgery, has been appointed assistant surgeon.

DUNDEE ROYAL INFIRMARY.

Dr. Henry J. C. Gibson has been appointed medical superintendent of Dundee Royal Infirmary in succession to the late Dr. Hugh E. Fraser. Dr. Gibson, who graduated M.A.Glasg., 1909, afterwards studied medicine at Edinburgh, taking the degrees M.B., Ch.B. in 1914 and M.D. in 1920. He served in the R.A.M.C. from 1916 to 1919, when he was appointed medical officer of Craiglockhart Poorhouse, Edinburgh, which includes the medical superintendentship of Craiglockhart Hospital. He has also been for some time medical administrator of Balgreen House, which contains 60 beds for children of school age.

AN ISLAND HOSPITAL.

The people of Arran, some two years ago, resolved that their war memorial should be a cottage hospital. With the help of natives who had wandered to other and perhaps richer climes the islanders collected £14,000. The Marquess and Marchioness of Graham gave a site on rising ground at the northern end of Lamlash, commanding an extensive view of the town and bay and of the outside waters of the firth past the south end of Holy Island. The architect of the building is Mr. Archibald Cook, a native of the island, to whom the work has been a labour of love. The cost of erection was £7,779, and nearly all the furniture and equipment was given by Mary, Duchess of Hamilton, and the Marchioness of Graham. The building is of red sandstone, two stories in height, and consists of an administrative block, flanked by wings for male and female patients respectively. It contains two wards of four beds each, capable in time of pressure of accommodating six beds each, two single-bed wards, an operating room, a surgery, consulting room, accommodation for nurses and servants, and the usual domestic offices. A garage and engine house are provided, and the building is lighted by electricity and has central heating. It was opened on July 8th by Mary, Duchess of Hamilton, who said that the hospital was a fitting memorial to the eighty-one Arran men who had fallen in the war. A brief address was then given by Sir Harold Stiles, in the course of which he said that Scotland possessed three kinds of hospital—the large general hospitals associated with medical schools, the large general hospitals serving the thickly populated industrial centres, and the cottage hospitals scattered throughout the rural districts. All of them were supported by voluntary contributions. The large teaching hospitals had to look to the public to supply funds not only for the housing and treatment of the sick and injured, but for the maintenance of up-to-date equipment and facilities for research, in order that the community might have well-educated doctors to attend them. No money spent upon these highly organized hospitals was wasted. Cottage hospitals were, he was thankful to think, beginning to spring up all over the country, the reason being that as the doctors were highly educated they were well able to do a very large part of the work of these institutions. The people of Arran were particularly fortunate in having secured the right type of man for their hospital—a young surgeon who had large experience during the war. Dr. J. R. Currie, medical officer of the Scottish Board of Health, after recalling his ancestral connexion with the island, said that he had been sent in 1913 to make an investigation, with the result that two dispensaries were set up, which had proved highly beneficial, but the scheme was not complete without a hospital. That had now been provided; in addition to the treatment of patients in it, the nursing services of the island would be co ordinated from the hospital. The Board of Health had cordially supported the proposal to appoint a resident surgeon. The surgeon appointed is Dr. E. L. Brandon Barrow, a graduate of St. Andrews and formerly house-surgeon to the Royal Infirmary, Dundee, who during the war served as radiographer, with the rank of Captain R.A.M.C., in the Egyptian Expeditionary Force.

HEALTH STATISTICS OF EDINBURGH IN 1921.

The Medical Officer of Health for the City of Edinburgh (Dr. A. Maxwell Williamson) has issued his annual report for the year 1921. The rates contained in it are founded upon the decennial census which was taken during the year, and they are therefore to be regarded as possessing a maximum degree of accuracy. The figures, further, are those of the city enlarged by the amalgamation with Leith and certain suburban areas which took place in November, 1920; comparisons with preceding years are therefore less easy to make, but in the report to obviate this they are instituted between the present city and the city before 1921 *plus* Leith and the suburban area. The population of the extended city is now 420,264, showing a decrease of 3,782, as compared with the same districts in 1911; there were increases (during the decade) of 1,130 and 3,568 respectively in Leith and the surburban area, but these were more than counterbalanced by the decrease of 8,480 in Edinburgh as it was before 1921. The ratio of females per 100 males was 118.9 in 1921 and 119.5 in 1911; the decrease in the male population in the decade was 0.6 per cent. and in the female 1.1 per cent.

Marriages and Births.

The marriage rate for 1921 was 11.0 per 1,000 of the population, a figure which justifies the Medical Officer's comment "the post-war boom in marriages has subsided," a comment which can be extended to Glasgow (10.7), to Dundee (10.0), and to Aberdeen (11.0). There was also signs of a subsidence in the post-war boom in babies, so to say, for the birth rate (corrected) for the extended city fell to 21.5 in 1921, having been 24.7 in the preceding year. The percentage of illegitimate to total births was 7.2 as compared with 7.1 for the whole of Scotland. The birth-rate of Edinburgh was lower than that of the seven other large towns and of Scotland as a whole (25.2); its illegitimate birth rate was lower than that of Aberdeen and Dundee, but higher than that of Glasgow.

Deaths.

The Medical Officer in his last report (for 1920) gave the death rate for the unextended city as 13.2 per 1,000; but the Census has shown that this should have been 14.2. For 1921 the rate for the unextended city was 14.8, for Leith 14.0, and for the Suburban Area 11.0; for the whole city it was 14.4—a slight increase. Glasgow and Dundee had rates of 15.1 and 15.3 respectively, whilst Aberdeen's rate was the same—namely, 14.4. Dr. Williamson, under this heading, returns to a matter upon which he has been persistently insistent—namely, the relation of bad housing to high death rates; with this as his text he makes the figures speak with emphasis, and had present circumstances been otherwise one might have wished that his improvement schemes for certain "black spots" could have been carried out in his term of office. As it is, one may hope that some of them may take form very soon. The cancer death rate rose from 1.4 per 1,000 living in 1920 to 1.5 in 1921, the highest ever reached; in 1898 it was 0.8 and 1904 1.0. The comment on the cancer-rate is as follows: "The advances which have been made during the past year in the reduction of death rates from practically all causes stand out in violent contrast to the history of the ever-increasing ravages made on human life by cancer." It is not alone that the cancer rate has risen from 0.8 in 1898 to 1.5 in 1921, but it has done so whilst the general death rate has fallen from 17.6 to 14.4. The deaths from cancer approximated to the total number from pulmonary tuberculosis, measles, whooping-cough, and all other forms of infectious disease.

Infantile Mortality and Child Welfare.

Infantile mortality for 1921 was 95 per 1,000 live births. Dr. T. Y. Finlay, who reports on this special part of the public health activities of the city, points out that only since the year when the Maternity and Child Welfare Scheme was put in working guise has the old-standing three-figure standard been departed from; it was on the average 110 between the years 1910 and 1919, and it fell to 89 in 1920. Dr. Williamson says:

"It is much to be feared that the extent of this work and the far-reaching nature of it, including its innumerable details, are not quite well known to the public at large. . . . It must always be borne in mind that the Child Welfare Scheme is carried out solely for the benefit of infants and young children under 5 years of age, together with expectant and nursing mothers; there could not be a section of the population more defenceless in time of need, or who more urgently call for assistance."

Dr. Williamson's remarks are called for, because within the past few months the zeal for economy has shown itself in certain quarters in a rather loud-voiced demand for curtailment of grants in respect of child welfare work. At any rate, Dr. Finlay's report tells the story of some fine preventive and curative success in this field. There is still room for further useful supervising work in the prematernity department, for at five out of the nine ante-natal clinics the new cases outnumbered the re-visits, a fact which showed that many expectant mothers were only seen once before confinement, and were therefore inadequately watched over in pregnancy. An interesting fact is that the percentage of deaths among legitimate infants for the first four weeks of life is greater than that among the illegitimate, whilst for the period four weeks and under three months the illegitimate percentage rises above the legitimate. In many cases the illegitimate infant in hospital enjoys during the first weeks of life the same care as the legitimate; when, however, the mother leaves hospital and he is boarded out or little cared for, he is more likely to die.

Venereal Diseases.

Another extraordinarily interesting and encouraging part of the report is from Dr. Lees's pen, and deals with the scheme for the prevention and treatment of the venereal diseases carried on mainly in the Royal Infirmary, but also to some extent in the Royal Maternity and in the Edinburgh Hospital for Women and Children. Both Dr. Williamson and Dr. Lees refer to one defect in the scheme as it is at present being worked. There is no means by which a patient who has come for treatment can be made to continue until cure has been assured. Too often the disappearance of the surface signs and the relief of the pressing symptoms is followed by the disappearance of the patient, who, still in an infective state, wanders at will in the general population and constitutes a danger. Such a state of matters is thought to afford an argument in favour of a modified form of notification of venereal diseases which might be enforced only when a patient refused or neglected to continue treatment. The total number of new cases treated under the Edinburgh Scheme in 1921 was 3,409, and the visits paid to the various hospital and dispensary clinics reached the large figure of 93,503.

The extension of the city boundaries led to a rearrangement of the various hospitals in the larger Edinburgh. The Royal Victoria Hospital was retained as a sanatorium for early cases of pulmonary tuberculosis; Pilton Hospital, formerly the General Fever Hospital at Leith, was set apart for the more advanced cases of that disease, and all the fever cases formerly treated there were transferred to Colinton Mains Hospital; some minor readjustments also were made.

Correspondence.

LISTER AND FRACTURES.

SIR,—It is not without interest to note that at the forthcoming meeting of the British Medical Association in Glasgow this month there appear in the programme of the Surgical Section no fewer than three contributions on the subject of fractures. That this particular subject should be discussed in Glasgow seems to find a very fitting setting, inasmuch as it was at the Royal Infirmary of this city that the initial step was taken by Lister to enunciate the great principles of antiseptic surgery. It was in that infirmary, in one of the wards—which fortunately is still in existence—that his now world-wide known case of compound fracture of the leg was successfully treated by his newly discovered method; and, as a result of this success, there has opened up in this department of surgery alone a field so vast that not only have countless lives been saved, but crooked limbs made straight and weak and wobbly "flails" rendered useful. Lister's own words in writing to his father about this epoch-making case are worth recalling. On May 27th, 1866, he thus wrote:

"There is one of my cases at the infirmary which I am sure will interest thee. It is one of compound fracture of the leg; with a wound of considerable size and accompanied with great bruising, and great effusion of blood into the substance of the limb causing great swelling. Though hardly expecting success, I tried the application of carbolic acid to the wound, to prevent decomposition of the blood, and so avoid the fearful mischief of suppuration throughout the limb. Well, it is now 8 days since the accident, and the patient has been going on exactly as if there were no external wound, that is, as if the fracture were a simple one. His appetite, sleep, etc., good, and the limb daily diminishing in size, while there is no appearance whatever of any matter forming. Thus a most dangerous accident seems to have been daily deprived of its dangerous element." (*Lord Lister*, by Sir Rickman Godlee, Bt., p. 187.)

Glasgow will have many interesting sights to show its visitors; but it is doubtful whether—more particularly to surgeons and medical men from distant parts—any sight would be more attractive than Lister's old ward in the Royal Infirmary and the theatre where he performed his operations. These are shrines at which the scientific world love to worship; and if—as suggested by a recent writer to the *Glasgow Herald*—either Sir Hector Cameron or Sir George Beatson, as once house-surgeons to Lister, could be induced to give a short address in the ward, a living picture of those halcyon days for future humanity could be presented which would enormously enhance the pleasure and profit of a visit to the ward and the many interesting relics which the local Lister Memorial Committee have succeeded in collecting.—I am, etc.,

Glasgow, July 5th. A. ERNEST MAYLARD.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Dr. Strachan calls attention in the BRITISH MEDICAL JOURNAL of July 1st (p. 29) to the employment by me of the term "heart force," and suggests that the more correct term would be "heart power." He is quite right, and I shall take his suggestion and use the word "power" in place of "force" in future.—I am, etc.,

St. Andrews Institute for Clinical Research, July 4th. J. MACKENZIE.

P.S.—I regret that I overlooked Dr. Samways's letter which he wrote eleven years ago.—J. M.

CAESAREAN SECTION.

SIR,—From Dr. James H. Martin's letter (BRITISH MEDICAL JOURNAL, July 8th, 1922, p. 67) it would appear that Dr. Martin claims to have introduced certain innovations in the technique of Caesarean section. This claim seems to me unjustifiable in view of the following considerations.

Dr. Martin's communication was made on April 1st, 1921, whereas incision through the rectus sheath in abdominal operations was recommended by me in my *Manual of Gynaecology*, published in January, 1915. This incision had been previously extensively practised by surgeons, and in my paper on Caesarean section (an abstract of which appeared in the JOURNAL) I distinctly stated my reason for making it on the right side—namely, the danger of severing the veins in the left broad ligament, as the uterus is usually rotated towards the right. The danger of this occurrence in an imperfectly lighted room is evidently not appreciated by Dr. Martin, as I fail to observe any mention of it in his article.

In the next place, as regards the manœuvre of turning the uterus inside out, I was taught this point in technique by Murdoch Cameron, who employed it over thirty years ago, but only in cases where separation of the membranes from the lower uterine segment proved difficult.

As I regard Caesarean section as an ordinary abdominal operation, I have always allowed these cases the same latitude as any other operation case. In the manual referred to it will be found that I recommend Fowler's position after abdominal operations, even if a case be not of a septic nature. While I employed these methods prior to Dr. Martin, who performed his first Caesarean section in 1915, I do not claim that I discovered any of them.

It is most regrettable that a communication of this description should have to be made, but the publication of Dr. Martin's letter leaves me no choice. Had he communicated with me privately it might easily have been averted.—I am, etc.,

Glasgow, July 10th. SAMUEL J. CAMERON.

SIR,—With regard to Dr. Martin's letter which appeared in the JOURNAL of July 8th (p. 67) I desire to state that as house-surgeon in 1914 in the gynaecological ward at the Western Infirmary and at the Royal Maternity Hospital I distinctly recollect Dr. Cameron in both institutions frequently opened the abdomen through the rectus sheath. His major obstetrical and gynaecological operation cases were encouraged to assume the lateral and sitting postures.

A considerable time before the reading of Dr. Martin's paper Dr. Cameron related to me the incident which caused him to abandon the incision through the left rectus sheath.—I am, etc.,

Glasgow, W., July 10th. R. A. LENNIE, M.B.

QUININE NECROSIS OF MUSCLE.

SIR,—It would be interesting to know the strength of the quinine solution used in the case recorded under the above heading in the JOURNAL of July 1st (p. 14). I well remember how frequently "little lumps" and "big lumps" used to be met with after giving intramuscular injections of strong solutions (gr. v in ♏ xxx) of quinine. Some years ago I adopted the method recommended by MacGilchrist of the I.M.S.—namely, giving the injections dilute (gr. v in 10 c.cm.)—since when I have seen no induration follow the injections. I have also used this strength for intravenous injection with good results.

This method of injecting quinine is practically painless and rapidly effective. The rapidity with which the drug is absorbed is shown by the frequency with which vomiting occurs within a few minutes of the injection, with a strong taste of quinine in the mouth.

After an extensive experience of this method both in private and hospital cases, and having been the subject of it on several occasions myself, I have no doubt that it should entirely replace the old method of giving quinine in strong solutions, by injection, a practice which in my experience was neither safe nor effective.—I am, etc.,

Broadstairs, July 5th. C. BRODRIBB, Major I.M.S.

INSURANCE FOR DAILY NEWSPAPER READERS.

SIR,—I consider the schemes of free insurance for registered readers of some of our leading daily papers have taken advantage of the general practitioner and the residents in hospitals.

The type of case which receives these benefits—fractured legs, septic fingers, etc.—is often sent on by the general practitioner to hospital for treatment. The resident thus gets demands to have certificates filled up, and the details of information required are both numerous and complicated.

The newspapers must be doing well from the various advertisements of splendid benefits offered to their readers, but they or the insurance companies who transact the actual business concerned with these awards seem to have arranged that they shall not be responsible for the doctor's fee; this is stated at the top of one of the forms sent in respect of a claim in the following terms: "The fee for this certificate is payable by the registered reader." In the great majority of cases the patient is quite without funds but wants a certificate immediately in order that he can commence to benefit.

When they do receive such pay, some patients do remarkably well. They are drawing £4 a week from a newspaper, sickness pay under the National Insurance Act, and also money from sick clubs. In the past the insurance companies have forwarded to the doctor the guinea or more in return for a certificate. A member of the poorer classes, even although he may be receiving a sum per week as much as £4, would think a guinea excessive for such a certificate, and would think the doctor was taking advantage of their sudden burst of wealth.

What, then, can the resident or practitioner do? The first class cannot follow up the patient and demand his fee, and if he is a good fellow neither can he withhold a first certificate knowing the benefits it will bring. I consider the newspapers or insurance companies have put the doctor in an awkward and thankless position, and should be compelled to pay the doctor's fee.

To anyone who is interested in medicine and surgery the steady demand for these certificates is the really unpleasant part of a morning's work in a casualty department.—I am, etc.,

July 7th. CASUALTY OFFICER.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—I write primarily to correct a number of misstatements in the letter of Dr. J. R. Whitwell in the JOURNAL of July 8th (p. 64).

Eugenic sterilization *has* been carried out with great benefit in a number of the States of the American Union. Dr. Whitwell's figures are quite incorrect. In California 2,558 cases have been sterilized, and not 635 as he states. In Connecticut, New York, North Dakota, and Kansas, where, he says, "the law, though in existence, has practically not been made use of at all," the figures are respectively 27, 42, 23, and 54. In Iowa, where, he says, "no operation has taken place under the Act," the figure is 49. In Indiana over 1,200 persons have been sterilized, and the Secretary of the State Board of Health there informed me in a letter last year that many of these were sterilized at the request of themselves or of their relations, and that the results of the operation were uniformly satisfactory.

We admittedly do not know yet exactly how heredity works, but we do know that by sterilizing defectives we can avoid the production of more defectives. I confess I consider it is of minor import that we may lose "three bishops," "eight hospital physicians," or even "a large number of members of Parliament" as well!

With respect to Dr. Truman's fear that "individually it might sometimes result adversely as regards the general health," I would repeat that no adverse results were reported in 1,200 cases in Indiana, while Lichtenstern of Vienna informed me last October that he had sterilized over 60 males without any adverse results, and I myself have sterilized 4 males and 4 females without any ill effects.

Of course, the results depend on the nature of the operation. Removal of the testicles or ovaries will affect the patient's health adversely; but the equally effectual and much less radical operation of vasectomy or salpingectomy are in no way deleterious. These are the methods so widely and beneficially used in the United States.

Sterilization of the unfit is an essential element of any comprehensive scheme which aims at ameliorating the present unhappy condition of the vast bulk of humanity.—I am, etc.,

London, W., July 8th. NORMAN HAIRE.

Medico-Legal.

CONSULTANTS' FEES.

IN an action brought by Dr. Anghel Gaster against Mr. Leopold Hirsch for £131 5s., fees for medical attendance on the defendant and members of his family, heard before Mr. Justice McCardie, the defence was that there was a verbal agreement for a special rate of remuneration, or alternatively, that the fees charged by the plaintiff were not reasonable. Mr. Justice McCardie delivered a reserved judgement on July 4th, and as it raises several points of considerable medical interest it is reproduced here from the report in the *Times*, which appears to be verbatim:

THE JUDGEMENT.

In this case the plaintiff, Dr. Gaster, sues the defendant for £131 5s. for services rendered as a medical man. The defendant admits that the plaintiff did the work charged for. He does not dispute the plaintiff's skill and care. The only question at issue is whether the plaintiff's charges were excessive. The defendant has fought the case as one of principle. He is a rich man. His defence represents a protest by business wealth against the theory that a rich man should pay unusual fees. The plaintiff's contention is (in substance) that a doctor's fees may, and should, vary with the financial status of the patient. The rich, it is forcibly said, should properly pay more than the normal fees because of the fact that poorer folk pay less and the very poor not infrequently pay nothing at all. A judge of the High Court is asked to fix the standard of medical fees and to settle the pecuniary relations between rich men and the doctors who heal them. The defendant has presented his case in a just and modest manner. He is perfectly willing to pay the amount fixed by the Court. The substance of the case turns on the illness of the defendant's son in April, 1921. The defendant was then absent from England. His brother acted on his behalf in calling in the plaintiff. For some years the plaintiff had been medical adviser to several members of the defendant's family. On April 23rd, 1921, the plaintiff examined young Mr. Hirsch. He saw him twice on April 24th. On that day Mr. Fagge (a distinguished surgeon) was called in. He diagnosed appendix trouble; an operation was necessary. It was performed on April 26th. It was successful. There was a risk, however, of complications. The plaintiff made many visits to the patient at the nursing home in Dorset Square where the operation had been performed. No other medical man was employed.

The Fees Charged.

Sometimes the plaintiff paid several visits in a day. His last visit to Dorset Square was on May 19th. He saw the patient again on June 4th. The recovery was then complete. For each visit to the patient the plaintiff has charged 2 guineas. The total number of visits was about forty-nine. For each of the two consultations with Mr. Fagge he has charged 3 guineas. For the attendance at the operation on April 26th he has charged 15 guineas. The items mentioned (together with three attendances on the defendant himself in June, 1921) show the matters in dispute. The case for the plaintiff is illustrated by taking the day of the operation. For that day the plaintiff has charged, first, the attendance at the operation, 15 guineas; and secondly, four visits to Dorset Square at 2 guineas each. The total for that single day, therefore, is 23 guineas. On other days the plaintiff has charged for four visits or three or two or one visit (as the case may be) at 2 guineas a visit. The defendant brings into court the total of £65 2s. In substance he says that 1 guinea per visit is enough, and that £9 9s. is sufficient to cover the two consultations with Mr. Fagge and also the attendance at the operation on April 26th, 1921.

I am fully satisfied that no verbal agreement was ever made, and certainly no agreement which touched the matter now at issue. The plaintiff, therefore, must rely on a *quantum meruit*. He is entitled to a just and fair reward for the services which he rendered. The case of young Mr. Hirsch was an anxious one. He gave it full and careful attention. Upon what scale should he be paid? This is a delicate and difficult matter for a judge to determine.

The Plaintiff's Status.

It is necessary, first of all, to consider the status of the plaintiff. He was born in Rumania. He is a doctor of medicine of Bukarest. In 1891 he came to England and secured an English qualification. He became a Member of the Royal College of Physicians. In 1891 he began to practise at St. John's Wood. His fees ranged from 7s. 6d. to £1 1s. In 1899 he went to Hampstead, and his fees grew higher—for example, they ranged from 10s. 6d. upwards. In 1913 he was established at Fitzjohn's Avenue, Hampstead. This district seems to be regarded as an area of accentuated opulence. The plaintiff's fees, therefore, grew higher still. His normal fee was 1 guinea. In 1914 the plaintiff took a consulting-room in Harley Street and began work as a consulting physician. His normal fees were £2 2s. for the first consultation and £1 1s. for the second consultation. But he still continued his practice at Fitzjohn's Avenue, Hampstead, and charged fees which varied greatly with the status of the patient.

In 1919 the plaintiff gave up his room in Harley Street and his house in Fitzjohn's Avenue and took a house in Devonshire Place, in the Harley Street district. His fees as a consultant were frequently £3 3s. for the first consultation and £2 2s. for the second. That range of fees must be remembered in the light of the resolution passed by the British Medical Association in the middle of 1919, that an increase of at least 50 per cent. on pre-war medical fees should be made. The British Medical Association has no statutory authority, but its opinions carry great weight throughout the medical profession.

The plaintiff is not, I think, a consulting physician in the strictest sense. In its rigorous significance, a consulting physician is one who acts only in conjunction with, or upon the introduction of, a family doctor. Not a few consulting physicians, however, do not insist on the above restrictions. I think that the plaintiff may be described as a physician who combined the diagnostic and advisory work of a consulting physician with that of a general physician, one who frequently visited the houses of patients in much the same capacity as a general practitioner, charging the same rate of fees. It was in this capacity that he had attended the wife and daughter of the defendant at a fee of £1 1s. per visit. It was in this capacity also that he continued to see or visit many of the patients whom he had gained during his practice at Hampstead. He charged them fees which varied with the position of the patient. It is just, however, to say that the plaintiff distinguished between new and old patients, and he did not, of course, undertake at any material time such matters as midwifery. He fully observed, moreover, the by-laws of the Royal College of Physicians, to which he belonged. I may also add that he generously fulfilled the beneficent and widely exercised privilege of a doctor in charging low fees to poor patients.

No Professional Standard of Fees.

In these circumstances what is the plaintiff entitled to charge? There is no rule of the profession which prescribes a standard. There is nothing in the medical profession which is equivalent to the scale of fees existing among architects, solicitors, or other professional men. Medical fees may be high or low. They vary greatly. They depend on locality, the status of the patient, the professional position and popularity of the medical man, and the general circumstances of the case. The General Medical Council has established no rule on the matter, nor has it indicated any requirement whatever as to the duty of a practitioner with regard to remuneration. (See Pratt *v.* the British Medical Association, 35 the *Times* L.R. 14 [1919] 1 K.B. 244.) If the fees are not agreed then the requirement of the law is that the charge shall be reasonable.

On what does reasonableness depend? To a large extent the matter must be determined by considering the amounts which by general custom are paid in normal circumstances. In its substance the question is sociological. The status of the medical man and his relation to society as a whole is one of deep importance. If his social status is to be high, his fees must not be unduly low. No one will dispute that a great profession should receive an adequate remuneration. On the other hand, the scale of fees demanded may outrun the financial resources of the general public and lead to well-based protest. It happens that the defendant here is, in fact, rich. But it seems to be the practice to presume a man's obligation for fees (within, of course, limits which should not be exceeded) not so much by his actual monetary resources as by the social position that he adopts. His house rent can be estimated. His bank-book is rarely seen. He who employs the apparatus of wealth may be fixed with the presumption of wealth. Perhaps this method is not on the whole an unjust one. The vast amount of work, moreover, which is done by the medical profession, not only without reward but also with generous self-sacrifice, must not be overlooked. The high cost of living imposed on one who practises his profession in a fashionable district is also to be considered, and the long and costly education of a medical man is a factor of serious weight. I must apply these considerations to the case and the body of evidence laid before me.

On one point I am clearly of opinion that the defendant is right. In my view the charge made by the plaintiff of £15 15s. for attending the operation on April 26th is excessive. I agree that the operation was one of a somewhat serious nature, and that the time given by the plaintiff was substantial. But Sir Thomas Horder, a consulting physician of the greatest eminence and experience, told me that he himself would not have charged a greater fee than £10 10s. I also think that the charge of 8 guineas for the four visits on April 26th is too much in the circumstances. On the other hand, I am of opinion that the fee of 3 guineas for each of the two consultations with Mr. Fagge is not excessive. Taking the case as a whole, I may say that I attach importance to the fact that when the plaintiff sent in his account to the defendant he only charged £75 instead of the £131 5s. now claimed by him in the action. If an actual mistake was then made I need only point out that it was made in circumstances which suggest that £75, rather than £131 5s., was nearer the mark as a just charge. In my view the present claim for £131 5s. would never been made but for the fact that Mr. Hirsch happens to be a very rich man. When the plaintiff was asked to give particulars of his charges he raised a strong objection. In my view particulars should have been given with courteous readiness. I shall not further analyse the case. In my opinion 93 guineas is a just and proper remuneration for the services rendered by the plaintiff. I desire to add two things. First, that the defendant has contested the case in a proper and considerate manner; secondly, that I recognize to the fullest extent the skill and experience of the plaintiff and his excellent work in the medical profession. I give judgement for 93 guineas.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following candidates have been approved at the examinations indicated:

FINAL B.M., B.CH.—*Materia Medica and Pharmacology:* H. N. Bradbrook, R. J. Brocklehurst, R. E. D. Cargill, A. F. Clarke, C. L. Ellgood, K. J. Franklin, C. J. Fuller, C. A. H. Green, L. N. Jackson, P. H. Leslie, G. F. L. Mitcheson, H. W. Pearson, A. A. F. Peel, V. P. Robinson, A. W. L. Row, G. P. Roxburgh, H. N. Stokoe, T. S. Townsend, H. F. Turney, W. R. Wood, C. R. Young, Alice E. B. Harding. *Pathology:* P. W. Boobbyer, R. J. Brocklehurst, R. S. Creed, A. D. Dyson, C. J. Fuller, P. H. Leslie, H. W. Pearson, G. F. Skinner, A. Q. Wells, G. I. Wilson, Dorothy J. Collier, Sybil R. Eastwood, Katherine M. Hodgkinson. *Forensic Medicine and Public Health:* W. B. Boone, W. R. Brain, D. S. Davies, H. A. Gilkes, E. H. Koerner, C. R. Lane, B. W. Williams, C. R. Young, Nancy B. Ockenden, Jean Orr-Ewing, Constance M. Ottley. *Medicine, Surgery, Midwifery:* C. W. C. Bain, W. Champneys, S. Hartley, R. F. Johnstone, D. G. Leys, T. L. Orme od, H. A. Osborn, H. D. Paviere, B. W. Williams, Dorothy W. Crook.

D.P.H.—*Part I:* C. Duncomb, K. Falconer, R. B. Lal. *Part II:* E. H. Creed, R. B. Lal, N. B. Laughton, E. Newton.

M.CH.—L. R. Broster, E. A. Crook.

The Dr. Lee's Professor of Anatomy has awarded the Welsh Memorial Prize for drawing in relation to human anatomy to Olive Howland Lister. The Theodore Williams Scholarship in Anatomy has been awarded to T. C. Hunt, and the Theodore Williams Scholarship in Physiology to T. S. Townsend.

UNIVERSITY OF LONDON.

UNIVERSITY COLLEGE.

THE following awards in the Faculty of Medical Sciences have been made:

Bucknill Scholars, 1921: A. S. Wesson; M. Barer (additional). Medical Exhibition, 1921: Violet H. Comber. Gold Medal for Anatomy (Senior Class): Catherine Watterson. Silver Medal for Anatomy (Junior Class): R. M. Walker. Gold Medal for Physiology (Senior Class): M. Cutner. Silver Medal for Physiology (Junior Class): Nina Blackett. Silver Medal for Organic and Applied Chemistry (General Course): R. M. Walker. Silver Medal for Pharmacology (General Course): Mary Tyars.

KING'S COLLEGE.

Worsley Scholarships.—The Council of King's College, London, has instituted a special scholarship under the Worsley Foundation for the post-graduate training of a fully qualified medical man, with a view to his proceeding or returning to India as a medical missionary. The scholarship is of the value of £150, together with free medical education at some Post-Graduate Institute. The ordinary Worsley Scholarship, which is of the value of £100, paid in five annual instalments of £20 each, together with free medical education at King's College and King's College Hospital, is also offered. The scholarship was founded for the education of medical missionaries proceeding to India, and a scholar must on election obtain security for the purpose of ensuring that he will proceed as a missionary when his education is completed.

Applications for either scholarship, accompanied by testimonials, should be sent to the Dean of King's College, Strand, W.C.2, not later than August 31st, 1922.

LONDON HOSPITAL MEDICAL COLLEGE.

The following prizes and certificates gained by students of the London Hospital during 1921–22 were recently distributed by Mr. T. H. Openshaw, C.B., C.M.G., senior surgeon to the hospital:

"Price" Scholarship in Science (£100), F. W. Ta Bois. "Price" University Scholarship in Anatomy and Physiology (£52 10s.), G. L. Thompson. Entrance Science Scholarship (£50), H. Evans. Prize in Clinical Medicine (£20), W. R. Brain. Prize in Clinical Surgery (£20), L. B. Leibster; honorary certificate, Miss L. P. Gibbon. Prize in Clinical Obstetrics and Gynaecology (£20), Miss M. C. N. Hadley; honorary certificates, Miss D. Cook, Miss K. Tresilian, R. M. Morris. Andrew Clark Prize in Clinical Medicine and Pathology (£26), W. R. Brain; honorary certificates, Miss D. Gibson, Miss C. M. Ottley, Miss M. C. N. Hadley. Letheby Prizes: (*a*) Organic Chemistry (£15), F. E. Kingston; honorary certificates, F. W. Ta Bois, Miss C. M. Hext; (*b*) Chemical Pathology (£10), F. B. Byrom. Buxton Prize in Anatomy and Physiology (£31 10s.), G. King; honorary certificate, H. G. Wyatt. Dressers' Prizes (£5): (*a*) Elementary Clinical Surgery, Miss D. E. Buckmaster and Miss M. C. N. Hadley (aeq., prize divided), P. H. O'Donovan, J. T. Ingram; honorary certificates, S. Vatcher, J. T. Burrell, L. Mushin; (*b*) Minor Surgery, J. T. Fathi, G. L. Thompson, R. G. Strouts; honorary certificates, Miss C. M. Hext, W. Evans, C. E. Nicholas, F. W. Ta Bois, H. Evans. Anderson Prizes in Elementary Clinical Medicine (£5), S. A. Grant, R. K. Wilson (B. D. Hendy, L. P. Marshall, and B. H. Wooderson aeq., prize divided); honorary certificates, Miss C. M. Ottley, L. C. J. Edwards, N. M. Goodman, R. E. Wilson, J. T. Burrell, Miss D. Mason, A. R. Lister, J. T. Ingram, R. T. Brain, W. A. Lister, J. R. A. Madgwick, G. L. Thompson. Arnold Thompson Prize in Diseases of Children (£15), Miss K. E. Tresilian; honorary certificates, Miss D. E. Buckmaster, K. W. Todd. Practical Anatomy Prizes: (*a*) (£6), R. D. Summer; (*b*) (£4), E. C. Hudson; honorary certificates, H. Evans, D. V. Rice, Miss H. M. Horton, F. E. Kingston.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examinations indicated:

FINAL M.B. AND CH.B.—P. D. Abbatt, S. Adler, R. Anderton, J. H. Appleton, K. V. Bailey, J. B. Bennett, Doris H. Bentham, E. W. Clough, †H. M. Coope, †Margaret Derbyshire, Dorothy M. L. Dyson, †Beatrice L. Ellison, H. P. Fay, J. H. Fletcher, E. S. Frischmann, A. Ingham, A. A. Pomfret, ‡Hilda Pratt, A. Rosenstone, *F. H. Scotson, H. Southworth, J. H. Struthers, C. B. V. Walker, Margaret Wild. *Obstetrics:* Kathleen M. Eastwood, P. Fildes, R. Handley, Doris M. Hardman, Mary Kent, C. B. Kirkbride. *Surgery:* Kathleen M. Eastwood, J. Yates. *Forensic Medicine:* G. B. Lord, Greta Lowe.

THIRD M.B. AND CH.B.—*Pharmacology and Therapeutics:* R. S. Adam, J. H. Anderson, J. K. Barr, Margaret A. Bromhall, W. C. V. Brothwood, C. V. Brown, Stella H. Brown, T. A. Brown, §Elsie Catlow, §T. E. D. Chadwick, W. Chadwick, Jenny D. Craig, J. A. Crowther, T. E. Davies, S. Devine, R. Ellis, J. D. Farquhar, C. R. Fielding, Miriam Florentin, A. G. Forbes, I. H. Freedlander, J. W. Graham, P. Gregory, Dorothy Guest, J. Haslam, G. H. Hayle, A. H. Heyworth, E. Holmes, W. L. Horton, J. N. Hudson, Elizabeth G. Humble, P. G. Johnson, Phyllis I. Kaufmann, D. Kemp, Barbara M. Knight, G. F. Langford, Annie T. Leigh, E. M. Liddle, §Hilda M. Linford, F. R. Lockhart, A. M. MacGill, C. T. Marshall, W. Mottershead, Alice M. Orrell, H. Penman, S. Pope, L. J. Prosser, Olive A. Ransome, A. R. Addey-Redfern, T. W. Rothwell, Eileen Sheehan, J. Shlosberg, §J. Sims, H. T. Simmons, G. S. Smith, Lois Stent, R. F. Stubbs, J. Troup, H. M. Turner, J. Viljoen, C. L. Walker, R. Walshaw, S. E. Ward, S. Whalley, H. Whittle, C. Wilcocks, R. M. Williams, G. Williamson, S. P. Wilson, K. K. Wood, P. B. Wood, F. Yates, J. M. Yoffey, N. A. T. Young. *Pathology:* C. N. Aldred, W. B. Bacon, ‖A. Barlow, C. E. W. Bower, B. Bowman, W. Broadhurst, J. F. Bromley, A. Brown, A. J. E. Cave, A. Coleman, Bessie E. Cook, G. Crompton, Mary S. Davies, C. Eccleston, N. L. Edwards, R. W. Fairbrother, W. E. Fildes, W. A. J. Fleming, E. J. Foulds, E. St. G. Gilmour, Anne H. Glancy, A. Glenn, Marjorie A. Grant, M. E. Heywood, ‖Evelyn M. Holmes, W. G. Howson, K. H. Jackson, A. M. Jones, Bertha Kahn, L. W. Kay, A. C. Kelly, V. F. Lambert, H. M. Levy, W. B. McKelvie, L. Morris, Marjorie M. O'Dea, R. W. Parker, M. Parkes, T. Pierson, D. Ramage, W. M. Roberts, Marjorie Robinson, Kate B. Scott, Agnes Seaston, G. E. Sharp, Margaret Simcock, Dorothy Simmons, H. C. Smith, W. Smith, W. G. Southern, Marjorie Thompson, Sarah Walker, E. Whiteside, Jane M. Wilde, ‖ L. J. Witts, E. J. Warburton, Marjorie Youatt.

* Second-class honours and Distinction in Medicine.
† Distinction in Obstetrics. ‡ Distinction in Surgery.
§ Distinction in Pharmacology. ‖ Distinction in Pathology.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

M.D.—S. S. Shri Kent.

M.B. AND CH.B.—*H. Cohen, †M. J. Cohen, ‡P. R. Hawe. *Part III:* Ethel Ashton, E. W. Ashworth, Eudora V. Beatty, R. H. Blair, A. Cathcart, Mildred M. Clegg, R. W. Cockshut, C. Cookson, Gladys W. Darlington, J. V. Hall, T. K. Hughes, W. D. Jeans, A. R. Jones, Irene E. Kenworthy, Eleanor Lancelot, N. H. H. Longton, B. L. McFarland, F. Q. McKeown, Annie Mather, Muriel Pickering-Jones, J. K. Reid, D. Riding, C. F. H. Sergeant, Mary D. H. Sheridan, J. E. T. Shirlaw, Enid F. Stowell, J. E. Sykes, A. K. P. Tobin, C. H. Walsh, Dorothy A. Williams, Grace H. Wood. *Part I:* V. C. Cornwall, L. Davies, R. Y. Dawbarn, Kathleen Edgecombe, C. K. D. Edwards, D. P. Finn, E. J. Foley, N. D. Fraser, S. C. Goldstone, W. F. Jones, T. S. King, D. Kippax, G. T. Krajewski, W. J. Laird, Lilian W. Massey, J. I. Noble. *Part II:* §B. Abelman, A. R. D. Adams, J. Berkson, R. W. Brookfield, T. L. Bulmer, M. Byala, I. Casdan, §M. Cohen, R. G. Cooke, ‖R. Cotter, I. H. Davies, Hilda M. Davis, F. Earlam, C. K. D. Edwards. D. P. Finn, D. Flenley, F. S. Fowweather, Susan Gluck, A. B. Griffiths, J. R. Griffiths, J. Hallam, C. W. Healey, S. Hesselberg, Enid M. Hughes, §Elizabeth Hunt, L. E. Johnson, F. H. Jones, T. J. Kirkpatrick, D. A. Levin, Eileen M. Lloyd, Marion R. Lunt, ‖D. Macfarlane, Mary M. McMillan, J. McWilliams, ‖P. Malpas, G. H. Mann, J. I. Noble, T. V. O'Brien, §B. Ordman, ‖C. H. Owen, §D. U. Owen, Eleanor M. P. Pearson, W. E. Pennington, J. D. O'M. Poole, E. L. Roberts, J. Roberts, R. A. Roberts, Kathleen M. Robertson-Dunn, J. R. A. Tallack, Dorothy A. Taylor, Elizabeth M. Theron, H. A. Thomas, J. G. Thomas, R. W. Thomas, A. Tumarkin, H. Walker, A. E. Wall, E. J. Whymark, H. P. Widdup, ‖A. G. Wilkinson, E. B. Wilkinson, J. Williams, Mary G. T. Williams.

* First-class honours with distinction in Surgery and Obstetrics.
† First-class honours with distinction in Medicine and Surgery.
‡ Second-class honours with distinction in Obstetrics.
§ Distinction in Public Health.
‖ Distinction in Forensic Medicine and Toxicology.

D.P.H.—Evelyn F. Bebbington, Louise Denil, J. Flanagan, W. M. Frazer, S. C. Gracias, G. R. James, Annie A. Muir, Edith M. Seward, S. S. Shri Kent, Marion Thomson, J. C. Twomey, C. J. Young.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—S. M. Alexander, Margaret Allice, J. W. Anderson, W. L. Balfour, Davie Anne D. Bannerman, F. D. M. Beaton, Margery E. Bennet, J. H. van den Berg, Elizabeth S. Blair, Victoria E. Brander, Jean T. W. Bucknell, *E. Bulmer, Jane G. H. Burnet, C. W. Burns, J. C. Caird, Isobel J. Callender, I. G. Cameron, Esther J. Campbell, Grace Campbell, Helen T. Campbell, Mary C. Campbell, Elizabeth B. Clark, F. W. P. Cluver, G. G. Cochrane, T. A. Cochrane, J. W. P. Collier, Jean M. T. Connochie, J. C. B. Craig, E. J. Crawford, F. G. Creaser, Margaret M. Creaser, Lilian M. Croskery, *B. M. Dick, Gladys H. Dodds, C. E. Dorsch, Jessie A. P. Dower, Jessie Eeles, E. L. Ewan, L. Feldman, T. Ferguson, Helen L. M. Fisher, J. E. Fletcher, *C. H. Fouche, Beatrice C. Galsworthy, Hilda R. Gibbs, E. S. Gordon, Alice J. Gray, Margaret A. Green, H. Greenberg, J. B. Gyle, J. S. Harris, J. A. Hart, Hilda R. Hay, Janet M. Henderson, J. M'A. Henderson, Enid M. Hern, J. S. Hovell, Sheila Hunter, W. M. Hyslop, R. G. Inkster, G. W. Ireland, H. Jamieson, E. M. Jenkins, Nora A. Jones, Elizabeth R. Kemp, Catherine G. Ketchin, A. J. Kilgour, Isabel F. King, N. Kretzmar, E. G. Lawrie, W. R. Levie, S. Lipetz, J. H. Loots, A. J. Lubbe, M. G. L. Lucas, S. L. Lucas, K. Lumsden, Betty Macdonald, *D. T. Macdonald, D. Macdonald, *J. R. M'Donald, A. M'Farlane, R. Æ. C. M'Intosh, D. P. MacIver, D. F. Mackenzie, J. F. Mackie, K. D. Mackintosh, R. A. MacNab, K. A. Macrae, *A. M. Marr, J. Martin, T. M'W. Millar, J. C. Moir, Janette C. Morrison, A. H. Mowat, Jessie E. M. Munro, R. Munro, J. K. Murray, Dorothea M. Norwell, Jessie R. H. O'Sullivan, Dorothy M. Patrick, H. Penu, Dorothy G. E. Potter, C. M. Rautenbach, F. W. Rawlings, W. M. Robb, Isabel M. Roberton, J. D. Robertson, Robina A. M'F. Scott, D. M. Scrimgeour, Marjorie K. Semple, S. Sieff, T. Skene, A. G. Smith, Marjorie V. B. Smith, Eva Stewart, H. G. Stockley, Jessie W. Strang, May D. Stranger, I. D. Stronach, P. W. Tait, Ruth M. A. Tait, Isabella Taylor, Florence L. Telfer, R. V. Thomas, C. M. Thompson, C. B. Thomson,

J. Thomson, Muriel J. Thomson, Annie R. Turnbull, Kathleen M. Turner, J. Waiggowsky, Georgina Waters, Annie E. Webster, Christian M. B. Welsh, Winifred Wight, Doris S. Williams, H. H. Wright, A. D. MacC. Young.

*Passed with distinction.

UNIVERSITY OF ST. ANDREWS.

SUMMER GRADUATION.

THE summer graduation ceremonial took place on July 7th, when the Principal, Professor J. C. Irvine, presided.

Honorary Degrees.

The honorary degree of Doctor of Laws was conferred on Dr. C. R. Marshall, Professor of Materia Medica in the University of Aberdeen, and on Sir Harold Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh.

In presenting Professor Marshall the following statement was made: After a distinguished undergraduate career in the Universities of Manchester and Cambridge and the tenure of an assistantship to the Downing Chair of Medicine, Cambridge, Professor Marshall came to St. Andrews in 1899 as Professor of Materia Medica, an appointment which terminated in 1919 with his transference to the Regius Chair in Aberdeen. As Dean of the Faculty of Medicine he had given ample proof of his abilities, his energy, his grasp of affairs, and his keen interest in the Medical School.

Of Professor Sir Harold Stiles it was said: The eminence of Sir Harold Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh, as a surgeon—as student, practitioner, and teacher of his art—needed no recital to give it warranty. Inspired with an enthusiasm for surgery by the example of two remarkable men, his grandfather and father in Lincolnshire, the latter of whom was a doctor of medicine of St. Andrews, he had been associated since his student days with the great Edinburgh school of surgeons, to whose high standing and long tradition he had added not a little fame. Since the first recognition of his skill by the awards of the Lister and the Walker prizes in his various offices as surgeon of the Sick Children's and the Chalmers Hospital, as charged in the war with the supervision of orthopaedic treatment in the Scottish military hospitals, and in the Regius Chair of Clinical Surgery in his University, he had been for twenty years a brilliant leader in the world of surgery, and had found time, amid the heavy demands of private practice, to advance by notable research the knowledge and treatment of cancer. To his exceptional and acknowledged skill as surgeon, and to his contributions to surgical and medical literature, he added in high degree that first attribute of the fine teacher, the power of inspiring both his colleagues—among whom they counted their own Professor of Surgery—and his students with something of his own energy and enthusiasm. To the honours of State and of academies which Sir Harold Stiles enjoyed, St. Andrews added with great respect her Doctorate of Laws.

Ordinary Degrees.

M.D.—J. Kinnear, W. G. Robertson, Amelia MacD. Thoms.

M.B., CH.B.—F. E. Anderson, J. C. Anderson, G. G. Buchanan, Katherine M. Campbell, D. C. Clark, G. R. M. Cordiner, W. M. Cumming, Frances Heron-Watson, L. Jacobs, W. L. Kinnear, N. M'Leod, Isobel M. Mansie, Margaret C. Muir, Bhagwant Singh Nat, Alan Pride, Agnes H. T. Shepherd, Edith M. D. Smith, W. L. Tullis.

D.P.H.—Georgina S. Craig, Janet H. Hodge, A. C. Meek, G. R. Ross.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have, after examination, been admitted as Fellows: A. N. Basu, J. Lipsey, N. B. Morris, C. Read.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the summer commencements in Trinity term, held on July 4th, the following medical degrees were conferred:

M.D.—R. D. FitzGerald, G. S. M'Conkey, H. Mitchell; Sir William Taylor, Regius Professor of Surgery (stip. cond.).

M.CH. (*honoris causâ*).—Dr. G. E. Armstrong, C.M.G., Professor of Surgery in McGill University, Montreal.

M.CH.—E. D'Arcy McCrea.

M.B., B.CH., B.A.O.—Minnie Alper, A. G. Bewley, M. Bewley, G. Blackall, G. R. Burns, J. V. Carroll, Beryl F. E. Cockle, I. Cornick, J. R. Craig, A. E. Drotske, N. McI. Falkiner, J. C. Gillespie, H. Hall, J. Harte, J. Lait, M. P. Louw, J. E. McCormick, J. C. J. McEntee, D. L. H. Moore, G. S. Moran, R. N. Perrott, May E. Powell, S. G. Rainsford, J. G. Russell, S. G. Russell, M. Sayers, R. Seale, A. H. N. Todd, M. M. Viljoen, S. G. Wedon.

THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS.

AT a meeting of the Fellows of the Royal College of Surgeons of England on July 6th for the election of three Fellows into the Council, in the vacancies occasioned by the retirement of Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., Sir William Thorburn, K.B.E., C.B., C.M.G., and Mr. W. McAdam Eccles, 816 Fellows voted, out of whom 809 forwarded their voting papers by post, seven voting in person. The result was:

	Votes.	Plumpers.
Sir W. THORBURN	502	... 57
Sir C. A. BALLANCE	435	... 10
ROBERT PUGH ROWLANDS	280	... 39
Mr. W. McAdam Eccles	272	... 17
Mr. Victor Bonney	228	... 15
Mr. John Herbert Fisher	207	... 30

The President declared Sir W. Thorburn and Sir Charles Ballance duly re-elected, and Mr. R. P. Rowlands, O.B.E., duly elected into the Council.

Obituary.

MAJOR-GENERAL W. F. STEVENSON, C.B., M.CH.

MAJOR-GENERAL WILLIAM FLACK STEVENSON, C.B., Army Medical Staff (retired), died at Bournemouth on July 7th, aged 78. He was born in Dublin on May 29th, 1844, the son of John Stevenson, of Strawberry Hill, Dalkey, County Dublin, and educated at Trinity College, Dublin, where he graduated B.A., M.B., and M.Ch. in 1865. He entered the army as assistant surgeon on March 31st, 1866, and served in the Royal Artillery in the old regimental days; he attained the rank of surgeon-colonel on July 9th, 1896, and retired on August 1st, 1905. He was granted the temporary rank of surgeon-general while serving in South Africa in 1899-1900, and again when employed at the Royal Army Medical College in 1903, and was confirmed in that rank, on the retired list, on July 16th, 1913. He was assistant professor of military medicine at the Royal Army Medical School, Netley, in 1890-92, and professor of clinical and military surgery in 1892-95. He served in the South African war in 1899-1901, as principal medical officer of the lines of communication, and afterwards as principal medical officer at Lord Roberts's headquarters. He took part in operations in the Orange Free State, including the actions at Paardeburg in February, 1900, at Poplar Grove and at Driefontein; and in the Transvaal, including actions near Johannesburg and Pretoria, and at Belfast. He was mentioned in dispatches in the *London Gazette* of February 8th, 1901, and received the Queen's medal with five clasps, and the C.B. On retirement he was appointed honorary surgeon to the King. He was subsequently employed at home in the recent war. In 1897 he was selected to attend the International Medical Congress at Moscow, as representative of the British Army.

In 1897, soon after quitting his chair at Netley, he published a book, *Wounds in War, the Mechanism of their Production and their Treatment*, which was at that time and for many years afterwards the chief authority on the subject. A second edition appeared in 1904, and in it he was able to embody the results of his experience in South Africa. A third edition was issued in 1910. General Stevenson is survived by his widow and two daughters. His only son, who entered the I.M.S. in 1896, died of heatstroke in Lucknow in 1900. General Stevenson was a highly accomplished surgeon, and a widely read man, possessed of great charm of manner. These qualities combined to give him influence both during his two terms at Netley and afterwards.

EBENEZER DUNCAN, M.D.,

Consulting Physician, Victoria Infirmary, Glasgow.

WIDESPREAD regret is felt in medical circles in Glasgow and the West of Scotland that Dr. Eben. Duncan has passed away. He has been a member of the medical profession for fifty-five years, having graduated with honours at Glasgow University at the early age of 21. Throughout his professional career he occupied a prominent place in the life of the city. Essentially he was a publicist, and wherever medicine was in touch with civic or social questions he was actively interested. He was a good speaker, clear and forcible, and spoke always with the strength of conviction. When the British Medical Association met in Glasgow in 1888 he was one of the honorary secretaries of the Public Health Section, under the chairmanship of Sir Henry Littlejohn, and the few who remember that meeting will regret his absence from the coming one.

Dr. Duncan was for a time an extramural lecturer on medical jurisprudence, was a president of the Sanitary Association of Scotland, of the Philosophical Society of Glasgow, and of the Royal Faculty of Physicians and Surgeons. He was physician to the Victoria Infirmary, and an examiner in several medical subjects at the University and for the Scottish Conjoint Board. In the war he was a member of the Scottish Medical Emergency Committee, and took part in its meetings with his customary vigour. Between two and three years ago, notwithstanding his age, he made a strong fight for election as Direct Representative for Scotland on the General Medical Council, and though defeated he secured a large measure of support. For his years he was a remarkably young-looking man until not long ago, when he had to submit to a serious operation. He spent a long and useful life in the service of his fellow men, and now he has entered into his rest, leaving behind him a respected name and a high

reputation for ability, energy, and integrity in all he undertook. His wife died several years ago, but he has left a family of three daughters and five sons, of whom three are members of his own profession, two in Canada and one in Africa.

A. N. DAVIS, L.R.C.P. and S.,
Medical Superintendent, Devon Mental Hospital.

THE sudden death of Dr. A. N. Davis, medical superintendent of the Devon Mental Hospital, Exminster, on June 29th, was a great shock to the staff of the hospital and to his friends. His death was the more tragic inasmuch as on the following day, when his resignation would have taken place, he was to have been presented with a handsome silver salver as a farewell gift from the staff of the hospital. It had been noticed for some time that his health was not good, but he had never completely recovered from an injury to the hip sustained by a fall some twelve months ago. He had been unable, in consequence of the injury, to do full duty, and last Christmas had intimated his intention of resigning. He was induced to continue in office, but eventually the committee decided, with great reluctance, to accept his resignation as from June 30th, 1922.

Arthur Nathaniel Davis was born on June 14th, 1857, and took the diplomas L.R.C.P. and L.R.C.S.Edin. in 1880. He had seen over forty-two years' service in mental hospitals, beginning with Bethnall House Asylum, London, and passing to the Portsmouth Borough Asylum. In 1883 he married the daughter of the late General George Warren, and accepted a colonial appointment in Antigua. The climate, however, did not suit his health, and after a year he returned to this country and became the medical officer of the institution at Forston, which was in those days an annexe to the Dorset County Asylum. Afterwards he was for seven years medical superintendent of the Plymouth Borough Hospital, and in 1898 was appointed medical superintendent of the Devon Mental Hospital at Exminster, a post he occupied for twenty-four years.

Dr. Richard Eager, his successor at the Devon Mental Hospital, to whom we are indebted for these particulars, adds:

"During his tenure of office he gained the entire confidence of the county councillors of Devon as an organizer and administrator, and his opinion on these matters has often been sought outside the county. When the war came he found himself faced with peculiar difficulties, inasmuch as his senior and second assistant medical officers were immediately mobilized. In spite of this he not only successfully carried on the administration of this large hospital, but also managed to take an active part in recruiting work for the services, and was given the rank of Major in the R.A.M.C. These energies, it is feared, taxed his powers, for in the winter of 1915 he had a serious illness. From this, however, he seemed to make a satisfactory recovery, and he resumed his duties as medical superintendent with his usual vigour. At the termination of the war he devoted great energy to provide this village with a recreation hall, and it is largely due to his activities that 'Exminster Victory Hall' now exists. His name figures on one of the foundation stones of this building, and will be a lasting memento to his long and happy connexion with the hospital and village.

"When he made up his mind to retire he decided to live at Exmouth, bought a house there, and spent much of his time in that town, visiting the hospital when necessary. His last visit was paid on the day of his death, when he appeared to be in his usual health and spirits. He motored to Exmouth in the evening. After he had gone to bed he was seized with pain, collapsed, and died almost immediately. The staff of this hospital, of which he was head for so long, held him in highest esteem, and his loss is felt by all. Dr. Davis was an all-round sportsman of no small ability. He was an excellent shot, and his name has been well known for many years in the county of Devon as a first-class cricketer. Since his inability to take an active part in the game he has regularly attended the Mental Hospital matches and encouraged the younger members of the team. He extended his sporting instincts into the field of his work, and as an administrator was always anxious to overlook offenders and forgive rather than punish.

"The funeral took place at Littleham Cemetery, near Exmouth, on the afternoon of July 4th, and was largely attended by members of the committee and staff of this hospital. A memorial service was also held in the hospital chapel at the same hour to enable the patients and those members of the staff not able to go to the funeral to pay their last respects to one who had been so closely associated with them for so many years.

"He leaves no children, but a widow, to whom the deepest sympathy of the whole staff of this hospital is extended. Personally I feel that by his death I am only one of many who has lost a great friend."

DR. R. WILSON BRUCE, of Glasgow, died on July 8th in his seventy-eighth year. He was educated at Anderson College and the University of Glasgow, and took the diploma of L.R.F.P.S. Glasgow in 1872. He was well known in the north-western district of the city, and was for many years visiting surgeon of the Eastpark Home for Infirm Children. He also took great interest in medical mission work and was at one time surgeon to the Medical Mission Dispensary, Glasgow.

The Services.

THE Territorial Decoration has been conferred upon Major S. Grant Ogilvy, 10th Bn., Royal Scots (ret.), late Major, R.A.M.C.

Surgeon Commander Alexander C. W. Newport, M.V.O., R.N., H.M.S. *Renown*, has been created a Commander of the Royal Victorian Order, and Surgeon Lieutenant Commander Henry E. Yeo White, R.N., H.M.S. *Renown*, has been appointed a Member of the Fourth Class of the same Order.

DEATHS IN THE SERVICES.

Deputy Surgeon-General James Henry Jeffcoat, R.A.M.C. (ret.), died at Surbiton on July 5th, aged 85. He was born at Leamington and was educated at St. Mary's Hospital; and after taking the M.R.C.S. and L.S.A. in 1858 he entered the army as assistant surgeon on August 5th of that year. He became brigade surgeon in 1884, and retired, with a step of honorary rank, in 1885. In his early days he served in the 9th Foot, the Norfolk Regiment. He went through the Afghan war of 1878-80 with the Kuram Field Force, and at the capture of the Peiwar Kotah, receiving the medal with a clasp.

Captain John Gregory Owen Moss, Indian Medical Service (retired), died at Millbank Military Hospital on July 3rd, aged 32. He was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1912, taking also the special certificate in tropical medicine, and M.D. in 1917. After serving as junior assistant at the Royal London Ophthalmic Hospital, he entered the Indian Medical Service as lieutenant on January 31st, 1914, and was promoted to captain on September 1st, 1915. He had to take sick leave in January, 1919, and to retire on account of ill health in December, 1919. During the war he was surgical specialist in advanced operative surgery at Karachi Hospital.

Medical News.

IT has recently been reported that H.R.H. Princess Louise, Duchess of Argyll, had been elected Patroness of the Anti-vivisection Hospital. We are informed that the election was made without asking her leave and that she has declined to accede to the request. She is not, and never has been, a Patroness of the Antivivisection Hospital.

COLONEL SIR A. LISLE WEBB, K.B.E., C.B., C.M.G., who was seconded from the Royal Army Medical Corps in 1919 for three years to undertake the duties of Director-General of Medical Services in the Ministry of Pensions, has now been gazetted out of the army in order to devote himself permanently, as a member of the Civil Service, to the medical work of the Ministry of Pensions. Sir Lisle Webb entered the R.A.M.C. in 1899, served in the South African war, and was promoted Brevet Colonel in recognition of his services in the late war.

ACCORDING to the *Journal of the American Medical Association* of June 24th, the figures of the Bureau of Vital Statistics of the New York Health Department show that since prohibition became operative decline in the alcoholic death rate has assumed extraordinary proportions. In 1916 (when the licence system was in effect) there were 690 deaths from alcohol in New York City; in 1920, 127 deaths, and in 1921, 141 deaths—a decrease of 500 per cent. per annum.

BOTH Spanish Houses of Parliament have approved the ratification of the Maternity and Unemployment Conventions adopted by the first International Labour Conference held in Washington in 1919. The Maternity Convention lays down that a woman shall not be permitted to work six weeks before and six weeks after childbirth, and shall during that period be paid benefits sufficient for the healthy maintenance of herself and her child. In addition to this she is entitled to free attendance by a doctor or certified midwife.

THE Voluntary Hospitals Commission, of which Lord Onslow is chairman, has organized a national conference of representatives of Local Hospital Committees to be held in the conference room of the Ministry of Health on July 18th and 19th, to discuss, among other things, the question of hospital revenues. The Minister, Sir Alfred Mond, will probably attend.

THE last post-graduate lecture of the session arranged by the Fellowship of Medicine will be given by Mr. Victor Bonney at the house of the Royal Society of Medicine on Wednesday, July 19th, at 5 p.m. The subject will be "Myomectomy as opposed to hysterectomy."

As some of our readers are aware, a committee has been formed for the purpose of standardizing scientific glassware. The committee is as far as possible representative of all the interests concerned—namely, the users, the manufacturers, and the institutions and Government departments connected with the glass industry or engaged in research work or the testing of glassware. Three subcommittees have been formed and a programme of work has been drawn out. When the programme has been carried out, or possibly as portions of the work are completed, the results will be published. Sir Herbert Jackson is acting temporarily as chairman of the committee and Mr. V. Stott, of the National Physical Laboratory, Teddington, Middlesex, is acting secretary.

THE June issue of the *Canadian Practitioner* contains a group of signed articles on the work and character of Sir William Osler. Dr. Norman Gwyn discusses the early influences affecting Osler's career; Dr. Harold Parsons and Dr. Gibb Wishart contribute notes on Osler from the standpoint of a house-physician and of a student; Dr. C. D. Parfitt writes on Osler as an incentive, and Dr. H. B. Anderson on the debt of the Academy of Medicine, Toronto, to Sir William Osler.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

ARTIFICIAL EYES FOR OPHTHALMOSCOPIC STUDY.

DR. HARAN inquires if there are any forms of artificial eye suitable for the practice of retinoscopy and ophthalmoscopy.

*** There are several patterns of demonstration eyes designed for the purpose of the practice of retinoscopy. Reference to the catalogues of wholesale manufacturers of pre-war date shows that no fewer than four patterns were on sale at prices ranging from half a crown to some forty shillings. The cheaper patterns were made of cardboard, the more expensive ones of metal, fitted with iris diaphragms and removable fundus pictures. All these models had essentially the same construction. The "eye" is a box rather like a deep pill box; at one end a small opening is fitted with a high-power convex lens, at the side of the box there is marked a scale giving the "focus" of the eye according to the extent to which the inner part of the box is pushed into the outer part. The apparatus is very simple and can be made by anyone. Experience shows that these artificial eyes serve only a limited purpose in the practice of retinoscopy and ophthalmoscopy. With them the work is much too easy, so easy that it is but a poor introduction to the real work in view. Their use puts the practitioner into somewhat the false position of the man who practises his golf strokes with a captive ball: he gains an impression of his progress which is lamentably disappointed when he essays the real thing on the course.

INCOME TAX.

"PATER" asks whether he is liable to income tax on payments coming to hand from professional work which ceased, so far as he was concerned, as from May 4th, 1921.

*** In respect of the financial year ending April 5th, 1922, he is liable on one-twelfth of the full year's assessment and is not liable at all for 1922–23, so that no income from professional work should be returned by him for assessment as for that year. "Pater" cannot be assessed for professional fees as from May 4th, 1921—that is, from the date when the source of those earnings ceased.

"J. C. R.'s" car transactions have been as follows:

1914, bought 11.9 Coupé Humber for £450 (present price £725).
1921, sold it for £270, and bought second-hand 25-h.p. Buick for £600.

*** The out-of-pocket cost is £600 – £270 = £330, and that is the amount to be claimed and allowed.

LETTERS, NOTES, ETC.

FOREIGN BODIES IN THE AUDITORY MEATUS.

DR. JOHN JOHNSTON (Blackpool) writes: The cases recorded by Dr. Sheard and Dr. Millington recall a case in which a foreign body, a glass bead, has been in the auditory meatus for over thirty years without causing deafness. A boy then about 5 years of age was brought to me with a small glass bead in his ear which I attempted to syringe out, an operation which produced vomiting, with the result that the patient obstinately refused further treatment and went home with the bead in his ear, where it still is, syringing being declined from that day to this; the curious thing is that the patient's hearing has never been affected.

THE ETIOLOGY OF CANCER.

DR. REGINALD LARKIN (London, S.E.) writes: If Dr. Chevers (p. 32) will refer to a letter by me in the *Lancet* for March 26th, 1921, he will see that I definitely lay down that rheumatism or gout, or in some types both, are predisposing and actual persistent factors in the continued growth of the embryonic cells constituting cancer; and, further, I appended treatment for the same, and have had many successful cases of cures.

MANCHESTER MEDICAL GOLFERS' ASSOCIATION.

THE annual competition among members of the Manchester Medical Golfers' Association was decided at Hopwood on June 28th, when the challenge cup for the best score was won by C. B. Gerrard. There was a tie for the prize given by the captain for the second best net score. The gold medal for the best gross score by a player handicapped at under 10 went to C. B. Gerrard, and the silver medal for the second division to A. A. Smalley. The following are the scores:

	Gross.	H'cap.	Net.		Gross.	H'cap.	Net.
C. B. Gerrard ...	80	6	74	R. R. Duncan ...	94	16	78
A. A. Smalley ...	85	10	75	I. Scott	90	12	78
S. W. McGhee...	87	12	75	H. Harris	96	17	79
A. Glen Park ...	81	5	76	J. W. Smith ...	90	10	80
Douglas Gray ...	94	17	77	B. Hawke-Genn	85	5	80
H. G. Cooper ...	82	5	77				

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at pages *27* and *28*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.